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AUTHOR Iwaki, H.; Hamano, Y.
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ABSTRACT

The first chapter of this overview of communications development and its use for instructional purposes in Japan reviews the history of mass communications in Japan, i.e., newspapers, movies, radio, and television, and notes the advent of new media. The second chapter describes the use of movies and radio in both social and formal classroom education, and discusses the influence of broadcast television on the intellectual and emotional development of children and the appearance of lifelong learning via television. Survey results are cited to provide information on the amount of time both children and adults spend viewing television, their attitudes toward the medium, the effects of television viewing on children's reading habits, the use of television programs in schools, and trends in television use for social education. The current situation of computer education in Japan is described in the final chapter, which details government policies and specific measures designed to bring the computer and broadcasting into various levels of formal education. Brief descriptions are provided of programs in elementary and secondary schools and in universities, as well as the use of computers to access information for research. Descriptions of the objectives and activities of two organizations which study the development of education and communication--the Centre for Educational Technology and the National Institute of Multi-Media Education (HKC)--conclude the chapter. Both a list of 19 references and a nine-item annotated bibliography are provided. (MES)

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Interface Between Education and Communication:

JAPAN

H. Iwaki
Y. Hamano

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PREFACE

The APEID Interdisciplinary Meeting on Education within the Context of Alternative Futures (Bangkok 2-8 November 1983) had recommended that the countries participating in it should be approached for making studies, in the context of futures, on interface of education with four areas, namely, communication; employment and leisure; state policy; and technology. The brief outline of such studies had been established jointly at the aforesaid Meeting. A fifth area was added on the recommendation of the Ninth Regional Consultation Meeting of APEID (Bangkok, March 1984) under the title 'education and urban development'.

Consequently, Unesco approached the participants of the Meeting to indicate their interest in undertaking interface studies as recommended.

The studies were then commissioned during 1984 and were conducted by interdisciplinary teams: two in Australia, two in India, one in Japan, one in Malaysia and one in the Republic of Korea. These seven studies are published in a series entitled "Education and Polity".

Grateful acknowledgement is made to the two authors of this study, one a researcher of the National Institute for Educational Research of Japan, and the other an associate professor of the National Institute of multi-media Education, and to the institutions which extended co-operation in the preparation of the study.

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Chapter One

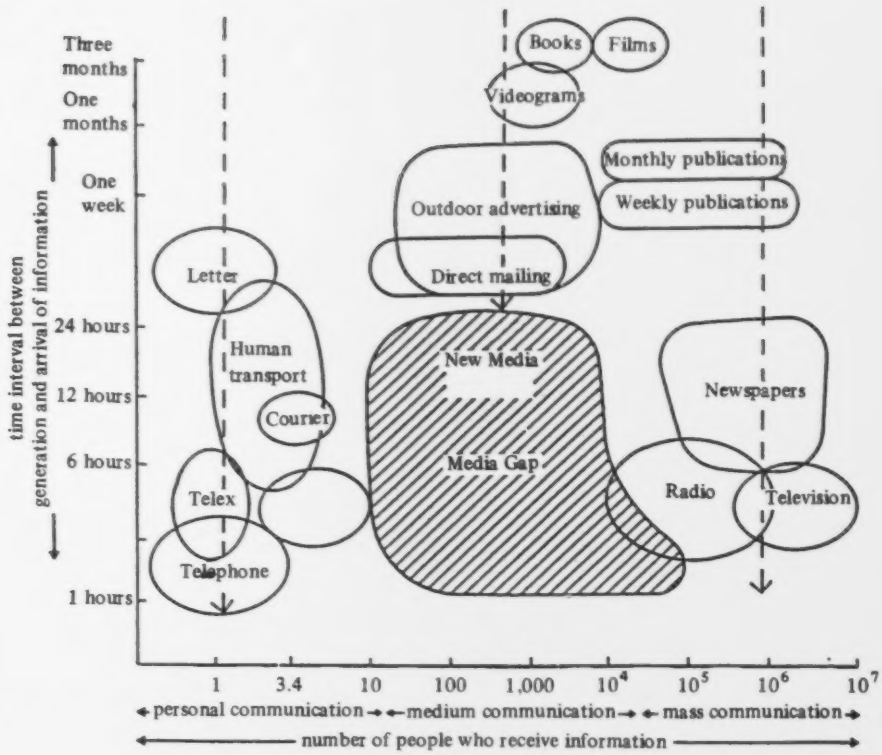
TRENDS AND FUTURE OF COMMUNICATION IN JAPAN

Generalized models of communication development

Very broadly speaking, communication media have developed from primitive signals like loud voice and beacons to mail (brought about by the invention of characters), from mail to published materials (brought about by the invention of the printing press), from published materials to telecommunication and broadcasting (brought about by the invention of the telephone, telegram and radio, television). And now, the new phase of development is said to be from telecommunication and broadcasting to information-communication (brought about by the new communication techniques called new media which are produced through the integration of telecommunication, broadcasting and information processing by computer). Theoretically, this communication development can be approached by two points of view. The first is the efficiency of information delivery, and the second is the freedom in access to and use of information.

From the first point of view, communication can be said to develop in such a way that information is transmitted to more and more people in less and less time. This is what has happened with mass communication. Efficacy of information delivery is usually evaluated by the combination of two criteria, namely, the number of people who receive information, and the length of time needed before information reaches the target group. Various communication media can be located somewhere in the Cartesian space produced by the combination of the two criteria, as is shown by Figure 1. According to this figure, communication media can be grouped into three major categories, personal, medium and mass communication media. Within each category of communication, communication media has developed downwards along the vertical axis, that is, towards the speed-up of information flow. As shown in Figure 1, the frontier of future communication development resides in the area of

Figure 1. Type of media



David, Godfrey and Ernest Chang
(The Telidon Book)

medium communication. Namely, as the saturation point of the development of mass communication best suited to the public in general is reached, there accumulate new needs for more varied and specialized information geared to specific regions or groups of people. New communication media are expected to satisfy these new needs.

From the second point of view, communication can be said to so develop that the freedom in access to and use of information is broadened. The freedom in access to and use of information can be evaluated by several criteria. They are: (1) direction of information flow; (2) the kind of participants to communication; (3) the number

of participants to communication; (4) the kind of objects transmitted; (5) freedom of request; and (6) information storage. As Table 1 shows, new media allows the most varied combination of participants and transmitted objects, free choice of message and opportunity. For this reason, new media are seen as the only means which can cater for new types of communication needs which are growing in the medium communication area.

All in all, realization of efficient medium communication through various new communication media is the most up to date goal of communication development. Japan is no exception to this general trend. In Japan, mass communication has almost matured, and strong needs have arisen for the use or exchange of more diversified and segmented information. Also, various new media which can meet these rising needs are coming into existence.

Early mass communication period

Overview. It was during this period which started from around 1890, when a technological breakthrough occurred in newspaper printing, to 1960 when an explosive spread of television was about to begin. At the beginning of this period, the newspaper established itself as the first mass media, and offered the people news, entertainment and enlightenment. But in no time, people's enthusiasm for entertainment began to flood towards movies. In addition, after the start of radio broadcasting, it became clear that even with all the technological innovations in news gathering, printing and circulation, newspaper could not surpass radio in delivering news to as many people and in such a short time. Eventually, newspapers came to find a way out by offering detailed comments and analyses other than news reports. Thus, at this period, these mass media coexisted, each with their own strong points.

The development of newspapers. The origin of modern newspapers in Japan were the organs of political parties which arose one after another with a variety of stands at the start of Meiji era. These party organs changed into commercial papers when they realized they could make very good money out of reports about civil wars or wars against foreign countries.

For example, total annual circulation suddenly rose from 8,370,269 (23,306 per one day and 6.90 per ten thousand people) to 33,449,529 (93,286 per one day and 26.00 per ten thousand people)

Table 1. Freedom in access to and use of information
(taken from Koichiro Hayashi, Informmunication Age)

		Direction of information flow	*Number of participants*	*Kinds of participants*	*Objects transmitted*	*Freedom of choice*	*Information storage*
Traditional media	Broadcasting	one way	one ⟶ many	man ⟶ man	voice stationary picture	impossible	media itself cannot store information
	Telephone	two way	one ⟷ one	man ⟷ man	voice	possible with voice	cannot store information
New media (information communication)		combination of one way and two way (free to choose)	(sender) (recipient) one ⟷ one many ⟷ many	(sender) (recipient) man ⟷ man machine ⟷ machine	voice character stationary picture dynamic picture	depend on users' request	media itself can store information
Example of new media		CAPTAIN teletext	facsimile Conference Telephone Video Conference	facsimile reception in the absence of recipients access to data base computer to computer communication	CAPTAIN with voice teletext VRS	CAPTAIN teletext access to data base	teletext telephone recorder

between 1874 and 1879, when there occured frequent rebellions against the newly born Meiji government. In 1896, two years after the Sino-Japanese war (1894-1895), four newspapers had a circulation of over 70,000 a day, seven newspapers had a circulation of 20,000 to 50,000 a day and five newspapers published 10,000 to 20,000 a day. Circulations further increased after the Russo-Japanese war (1904-1905). Such expansion of circulation triggered by war continued thereafter, and in response to this growth of market, the content of newspapers came to be occupied firstly by news about domestic and international happenings and secondly by entertainment such as serial novels.

Consecutive wars not only brought more and more readers, but also stimulated various technological innovations in printing or news gathering. A rotary press machine was first imported in 1890 and made massive printing possible. Through this new printing technology, it became possible to deliver information to as many people as possible in a short time. This was really an epoch-making affair which heralded the birth of mass media in Japan. As regards news gathering technology, the telegram was the most advanced technology before the First World War. After that, long distance telephone cable networks came into being. Further-more, the use of carrier pigeon or wireless enabled news to be sent back to Japan from abroad. Most of all, the use of wireless contributed greatly to the shortening of the interval between news gathering and printing, and together with the progress of printing technology, greatly enhanced the power of newspapers as mass media.

There was no reason why the use of wireless needed to be confined to the connection between press agencies and newspaper publishing companies. It was soon realized that if it were used to connect news agencies and newspaper readers directly, it would completely short-cut the process of printing and delivery. This was what really happened with the appearance of radio broadcasting after the First World War. Before long it became clear that newspapers could not send news to the people more quickly than radio broadcasting. Newspapers then resigned themselves to the fact that they were not now the fastest news media, and found a way out by offering detailed reports, analysis and comments. They had a fundamental advantage over radio in that newspapers had the function of information storage. This was the very reason why newspapers, after

the appearance of radio or even of television, could retain their position as a kind of comprehensive media which contains news, comments, entertainment, publicity and enlightenment. Table 2 shows the historical trend of newsprint consumption. It shows the continuous growth of newspaper, interrupted by the Second World War, but not interrupted by the appearance of either radio or television.

Table 2. The development of newspaper, movie, radio and TV in Japan
(NIRA, Historical Trends of Life Standard in Japan, 1985)

year	*consumption of newspaper (ton)*		*number of movie theaters*	*radio subscription*	*TV subscription*
	real	*estimates*			
1924	–	–	–	5,455	–
29	–	–	1,270	650,479	–
34	–	276,006	1,538	1,979,096	–
39	–	270,678	2,018	4,862,137	–
44	–	112,014	1,759	7,473,688	–
49	–	108,830	2,225	8,650,037	–
54	422,095	–	4,707	12,505,370	52,882
59	679,982	–	7,400	13,413,077	4,148,683
64	1,176,525	–	4,927	2,746,488	17,132,090
69	1,680,562	–	3,602	–	22,087,548
74	2,058,144	–	2,468	–	25,753,396
79	2,522,962	–	2,374	–	28,931,692
80	2,592,045	–	2,364	–	29,262,991

Development of movies. Kinetoscope, the first movie invented by T. Edison in 1893, was imported into Japan in 1896. Cinematograph, invented by August and Louis Lumiere in 1895, was also imported in 1897. These initial movies were put on the screen one after another at traditional entertainment halls or vaudeville theaters, and never failed to arouse extraordinary excitement among people. This big success came from the tremendous power of picture media which secured prompt comprehension and profound emotion among even illiterate or poorly educated audiences. This advantage of picture media brought three facets to the development of movies.

The first was its development as news media. As is usual with other mass media, movies too were given great developmental impetus by the occurence of wars. The movie industry established

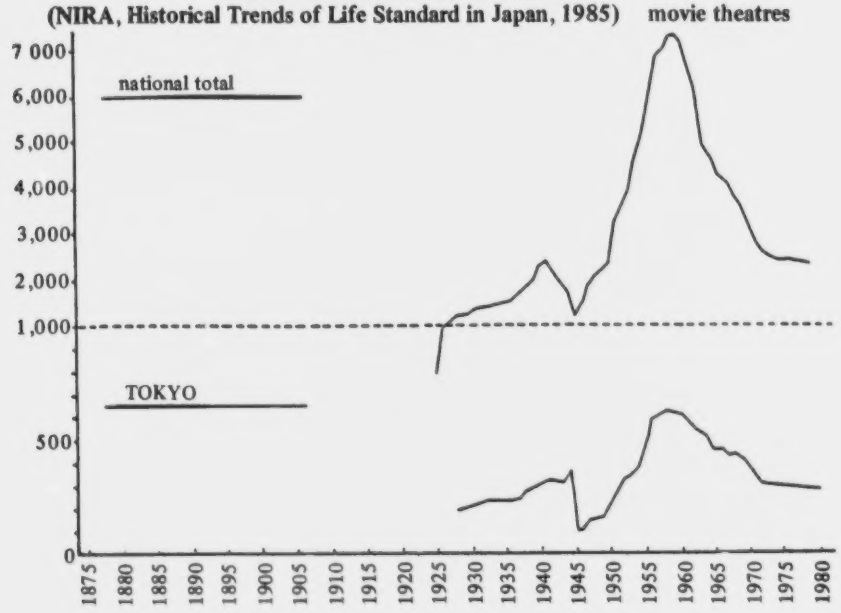
itself only with the big profits gained from war news films thus enabling the construction of movie studios and movie theatres. But the movie lost its place as news media, because it fell far short of newspaper or radio in the quickness of news delivery. The success of war films came not from their value as news media but mainly from their ability to show audiences unfamiliar things in foreign countries.

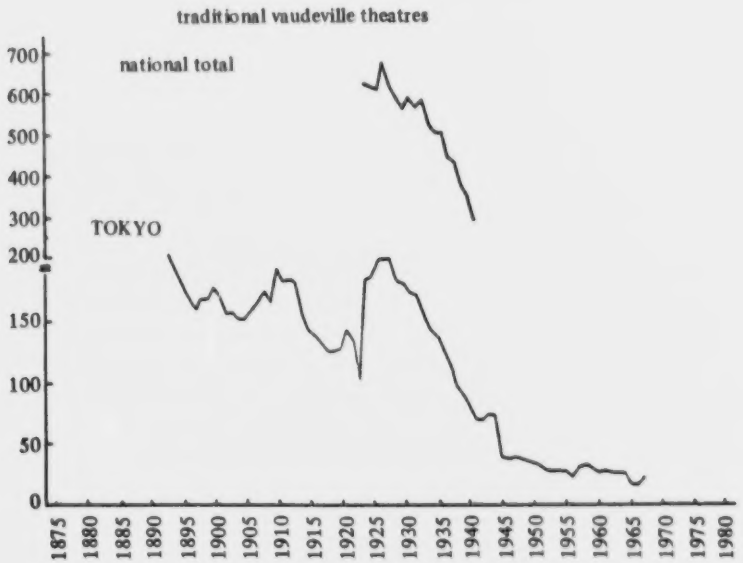
The second facet was its development as inculcation media. Utilization of the ability of picture media to cause profound emotion was clearly intended, when war films were frequently put on the screen to whip up the war sentiment at the beginning of the Second World War. But the initial success of war films was not because they managed to stir up fighting morale among people but because people were in a state of exultation about the initial victories and could still afford to enjoy exotic scenes and manners on the screen. As the war situation became unfavourable, people became indifferent to war films, which at the same time developed certain mannerisms.

The third facet was the movie's development as entertainment media. As early as 1911, a French entertainment movie made a gigantic hit describing an atrocious criminal's genius-like repetition of crime and escape. Many youths were deeply impressed by this hero-criminal, and went as far as to imitate his artful crime, with the resulting introduction of a Movie Inspection Law by the government. This example alone is enough to symbolize the development of the movie as entertainment media. As Figure 2 shows, various traditional public entertainment declined gradually but steadily as movies became more popular. The sudden increase of movie theatres right after the Second World War shows that movies played a large part in satisfying the people's thirst for entertainment. This remarkable development of movie continued until the explosive spread of television.

Development of radio. The first radio broadcasting was begun in 1925 by three broadcasting corporations. Since then, radio has developed quite rapidly as is expressed by the increase of audiences in Table 2. The number of radio subscription was 5,455 in 1924 when experimental broadcasting was begun, and 258,507 in 1925 when regular broadcasting was begun. Since then, the number continued to double or even triple after each five years until the end of the 1950s, when, as a result of the appearance of transistor radio receivers and the amazing reduction in cost, virtually everyone could listen to radio without paying a fee.

Figure 2. The increase of movie theatres and the decline of traditional vaudeville (variety) theatres
(NIRA, Historical Trends of Life Standard in Japan, 1985)





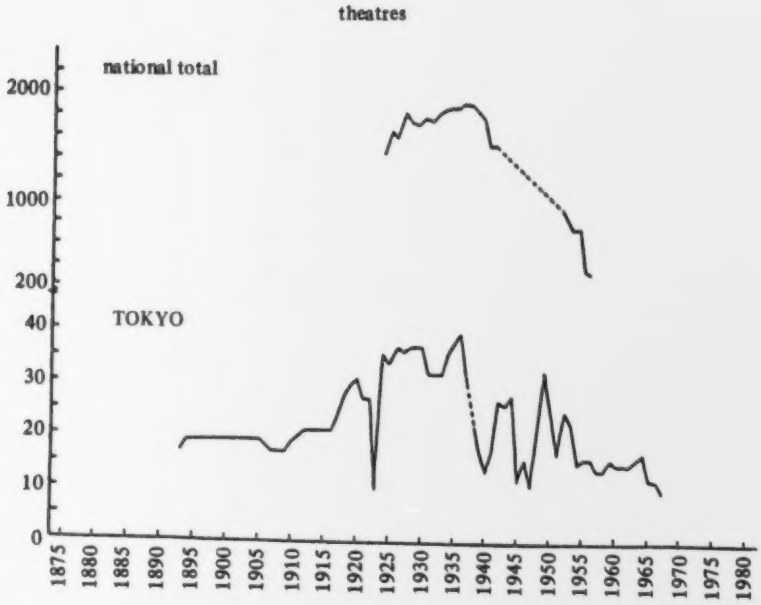
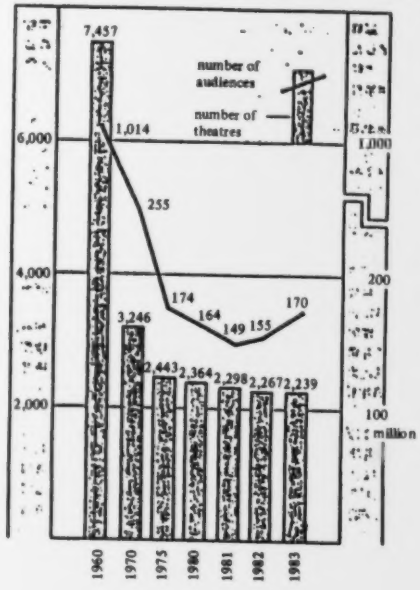


Figure 3. The number of movie theatres and audiences
(Survey by Japan Society of Movie Producers)



This remarkable development of radio was brought about for two reasons. The first reason was government support and control because of radio's merit as news media. Radio had a great advantage over newspapers in that it made the printing process and deployment of news stands unneccessary, and consequently far superceded newspaper as speedy news media. Besides, radio was a brand new media which had no tradition of political affiliation as newspapers did. Consequently, the government placed great importance on the control and support of radio broadcasting. All broadcasting stations were owned and managed by a semi-public corporation, and the important wartime government news was released first through this radio broadcasting network. Even right after the Second World War, radio was put under the tight control of the Allied Occupation Armies for the purpose of propaganda and inculcation of democracy.

The second reason for the development of radio came from its technological development. In 1926, radio broadcasting stations increased from three to seven and junction lines between them were completed. The number of broadcasting stations continued to grow thereafter and finally reached 46 at the beginning of the Second World War. The fact that all this strengthened network of broadcasting stations was under the control of a semi-public corporation (the antecedent of postwar NHK, Japan Broadcasting Association) enabled a nation-wide simultaneous news delivery. After the Second World War, many commercial broadcasting stations were established by private enterprises and added to the strengthening of local networks.

As regards the development of radio receivers, the spread of vacuum tube radio began at around 1932 and gradually replaced crystal radio receivers. At the end of the 1950s, there appeared a revolutionary transistor receiver which ousted the vacuum tube receiver in no time. Since then, the radio receiver has almost become an item of personal belongings.

The maturity of mass communication

Overview. The period from 1960 onwards is characterized by the dominance of TV over any other mass media and its occupation of peoples' time. Television has dominated other mass media because it offers news or entertainment to more people in much less time than other media. Thus, in 1965, the volume of information

offered by TV came to occupy over 70 per cent of total information supplied by mass media, and since 1975, it has occupied about 80 per cent (see Table 3).

Table 3. The contribution of TV to the total volume of information supply
(The Ministry of Posts and Telecommunications, Telecommunication Census)

	radio (%)	TV (%)	newspaper (%)	other media (%)
1965	19.1	73.2	2.4	5.3
1970	17.7	76.7	1.9	3.7
1975	13.5	81.2	1.4	3.9
1976	14.3	79.9	1.5	4.3
1977	14.2	79.8	1.5	4.5

First of all, the movie was completely defeated by TV as is expressed by the catastrophic decrease of movie theaters shown in Table 2. The height of the movie's prosperity was 1958 when 1,120 million customers went to the movie theaters. But only eight years after that, it sadly dropped to 340 million customers barely one third of the heyday. In 1981, it finally dropped to the bottom of only 150 million customers (see Figure 3). It was quite natural that people should stop going to movie theaters once they realized that they could see dramas, TV movies and various public entertainment programmes at home. As a result of this, the movie industry was forced to make every effort to find its way out in large scale spectacular dramas, violence movies or porno-films.

Radios and newspapers also suffered seriously with the development of TV, because TV far surpassed them in its power as news media which had hitherto been their lifeline. Although the number of radio broadcasting stations continued to increase until 1975 (see Table 4), the amount of time which people spent a day on listening to radio decreased from 90 minutes in 1960 to less than 30 minutes

in 1965. Instead, the amount of time which people spent a day on watching TV increased from less than 60 minutes in 1960 to nearly 180 minutes in 1965.

Table 4. The number of radio broadcasting stations
(Survey by NHK)

Year	*1945*	*1950*	*1952*	*1955*	*1960*	*1965*	*1970*	*1975*	*1976*	*1977*	*1978*	*1979*
Public Companies	–	–	21	62	115	148	161	180	186	188	188	188
NHK	91	114	137	176	248	299	611	768	778	783	788	–

What brought radio out of its difficulty was the spread of the transistor radio receiver. As a result of this, people came to listen to radio not in groups but individually while simultaneously doing other things such as playing, studying, driving cars, on the way to and from their offices, and even working. In accordance with this change, radio programmes came to be so segmented that various programmes at various time zones now focus on each specific kind of audience. This so-called audience segmentation greatly saved radio from its hardships.

Against the appearance of TV, various technological innovations were introduced into the newspaper printing process. In 1959, networking of newspapers printing factories by facsimile or telextype was begun. In 1968 the Cold Type System (CTS) was introduced which made printing plates out of sensitized papers or photographic films through the use of phototypographic composing machines. This was a revolutionary technique which expelled lead type from the newspaper printing process. Offset press machines came to be widely used in accordance with the introduction of CTS. All these innovations contributed greatly to speed-up newspaper production, but fell far short of turning the table in favour of newspapers against TV.

According to the research done by one of the leading newspaper companies, the average time which people spend a day on reading newspapers decreased from 55 minutes in 1959 to 45 minutes in 1963 and still less to 38 minutes in 1966. This decrease happened since 1961 when TV subscriptions passed ten million and 55.5 per

cent of all Japanese families owned their own TV receivers. This indicates that people read newspapers only for the purpose of confirming detailed comments and analysis about the news the knowledge they already had through TV. Here we can see that the information storage ability of letter media barely rescued newspapers from their difficulties.

Development of TV. In 1953 when TV broadcasting first began, there were only 866 subscribers. This figure suddenly jumped to 52,882 the next year, and increased more than eight times between 1949 and 1954, and more than four times between 1954 and 1964. This increase continued thereafter until the 1980s when it almost came to saturation (Table. 2). In parallel with this rapid growth of TV subscriptions, the rate of the number of families with TV receivers against the total number of families rose dramatically. In the case of black and white TV sets, it rose from 7.8 per cent in 1956 to 86.4 per cent in 1968, and in the case of colour TV sets, it rose from 5.4 per cent in 1968 to 97.8 per cent in 1979. In parallel with this spread of TV sets, people watched TV longer; from a little less than 60 minutes in 1960 to 199 minutes in 1975. This tremendous development of TV was brought about by technological innovations in TV broadcasting and the appeal of the media itself.

Technological innovations. In 1953 when TV broadcasting started, the price of a TV receiver was more than half the annual income of middle level salaried man. But as a result of the development of mass production, it decreased to less than half the initial price until 1959 when the high growth of the Japanese economy and concomitant spiraling of peoples' income had just begun. The reduction in price relative to peoples' income continued thereafter, and most directly fostered the spread of TV.

As with technological innovations of television wave transmitting, the number of TV broadcasting stations increased from eight broadcasting stations in seven major cities (Sapporo, Sendai, Tokyo, Nagoya, Osaka, Hiroshima, Fukuoka) in 1955, to 9.2 thousand (NHK 5.7 thousand and private companies 3.5 thousand) in 1978 (Table 5). For the sake of those areas where mountains or tall buildings obstruct TV waves the installation of CATV (Community Antenna Television) system was done quite vigorously. The number of CATV facilities increased from 1,500 in 1960 to 28,000 in 1980, and subscriptions to CATV reached three million in 1980.

Table 5. The number of TV broadcasting stations
(Survey by NHK)

Year	*1952*	*1955*	*1960*	*1965*	*1970*	*1975*	*1976*	*1977*	*1978*	*1979*
Public Companies	–	2	61	372	1,096	2,026	2,362	2,861	3,483	4,008
NHK	1	6	70	783	2,448	4,548	4,947	5,342	5,730	–

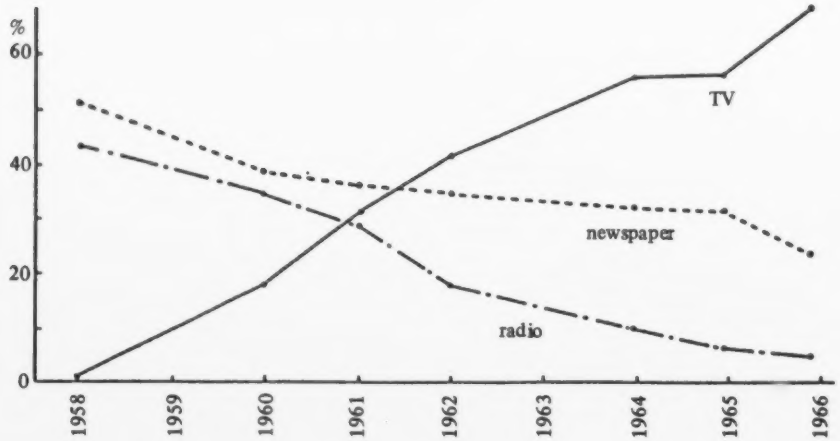
Other innovations in TV wave transmitting was the start of colour TV broadcasting and satellite relaying. Satellite relays were first begun in 1967 using an American satellite, and in 1977 the first Japanese satellite was launched for the purpose of broadcasting. Colour TV broadcasting has gradually replaced black-and-white broadcasting.

The appeal of media itself. Mass media is said to have three facets in general; mass media as news media, as entertainment media and as education or culture media.

TV fascinated people first of all as entertainment media. It is most typically expressed by the popularity of street corner TV which a private TV broadcasting company deployed to crowded street corners around 1955 when TV receivers were too expensive for people to possess their own. This street corner TV attracted quite a lot of people and caused great excitement. A famous example is the audience who gathered to see a boxing title match fought between a Japanese challenger and an American champion. The audience at this programme was estimated at more than 500,000 and in many places in and around Tokyo the traffic was paralyzed. In 1968, as many as 81 per cent of people chose TV in response to the question "What brings to you most relaxation and amusement?" in a research done by NHK (movies rated 13 per cent, newspapers and reading books only 1 per cent each).

TV has gained great popularity as news media too. According to research done by one of the leading newspaper companies in Japan in 1951, TV became a medium through which people got their first knowledge about various occurrences in the world. (Figure 4) The fundamental reason for this is that, through television's on-the-spot news report, people can confirm various events through their

Figure 4. The media through which people get the first knowledge of events
(Survey by Yomiuri Newspaper Company)



own eyes at the same time as they happen. Thus, according to NHK's research, in response to a question." Which of the three media do you believe in when news reports by them are contradictory?", 43 per cent of the respondents points to TV, 32 per cent to newspaper and 16 per cent to radio (1963 research) while 49 per cent pointed to TV, 33 per cent to newspaper and 8 per cent to radio in 1975.

As time went by, there occurred a slight but not negligible change in peoples' expectation towards TV, that is the growth of needs for educational programmes. This is well exemplified by the research done by NHK on the kind of programmes which people want to see. In 1955 people answered that they wanted to see entertainment programmes. But in 1969 they answered that they wanted to see programmes which dealt with scenes and manners of both Japan and foreign countries, besides news programmes or entertainment programmes (Table 6).

From mass communication to medium communication

Overview. The medium communication society, which is just looming out of the saturation of mass communication society, has two fundamental features.

Table 6. Programmes that people want to see
(Survey by NHK)

(1955)

Photoplay	69%	boxing	48%	Professional baseball	45%
pro wrestling	66%	charade	47%	comic story comic dialogue	41%
"sumo" wrestling	60%	newscast	47%	short film	38%
"kabuki"	55%	relay from the variety hall	47%	modern play	38%
play of the new theatrical school	52%	news of the week	46%	student baseball	36%

(1969)

newscast	64%	historical drama	39%	pro wrestling	32%
weather forecast	53%	sceneries and manners	36%	child care, health, cooking	29%
dorasma of home life	47%	quizz, game	35%	news commentary	27%
popular song folk song	45%	baseball	35%	detective, adventure, mystery drama	27%
comic story, comic dialogue school	42%	overseas news	33%	boxing	26%

The first is that a new society is required to increase the efficiency and to broaden the range of freedom in the medium communication area (see Figure 1 and Table 1). This requirement stems from peoples' new needs emerging at the end of the mass production, mass consumption and mass communication society. Mass communication, which reached its zenith with the appearance of TV, was a form of communication well suited to a mass production and mass consumption society. People worked for factories sitting at mass production lines for longer and longer hours to earn more and more income. People bought mass-produced goods which they knew through advertisements on TV. People spent their limited leisure time on seeking momentary pleasure from TV.

Namely, in a mass-production, mass-consumption, mass-communication society, peoples' lives were composed of only two discrete parts – firstly, personal communication life at families and workplaces, and secondly, mass communication life which has no substance of human association.

But now that the high level economic growth and the mass production society have come to a halt, people are now seeking more diversified life styles, brought about by attaching more importance to other forms of human relationships and communications, than personal communication life or mass communication life.

The second fundamental feature of the coming medium communication society is that its realization and development depends on the success of such "new media" as ISDN, CATV, two-way CATV, LAN, VAN, teletext, videotex, TV conference, VRS and the like. These media are all produced from the integration of broadcasting and telecommunication by information processing through computer, and are purported dramatically to broaden the freedom in access to and use of information, and through this, are expected to vitalize and make efficient the communication in the medium communication area.

All in all, the emerging "new media" society or medium communication society presupposes peoples' computer literacy (the means to live in a medium communication society) and desire to create new forms of human association (the goals of a medium communication society), be it based on geographical community or community of hobbies, intellectual or a esthetic interests and the like. In any way, the fate of a "new media" society or medium communication society rests upon education.

The following chapters touch in some detail on such matters as the people's changing attitudes towards TV and increasing needs for lifelong learning; children's growing interests in computers, and various measures to bring the computer and broadcasting into various levels of school education. The last part of this chapter gives a cursory glance at some major new media.

The appearance of various new media. From the mid 1980s various unique new media have appeared. People call 1984 "the first year of the new media era", for videotex and teletex which are seen as the foci of the new media age were first put to practical use in this

year. Also such media as two-way CATV, High Definition Television and Satellite Broadcasting are heading steadily towards practical use. Whether the nation likes it or not, Japan is now plunging into the realm of a high level information society. For the sake of brevity only a few of the major new media are introduced here.

Videotex

In this system, which is composed of private terminal TV receivers and a central information station connected by telephone cable lines, various character and picture information are delivered to people at their request.

In Japan this system is called CAPTAIN; Character And Pattern Telephone Access Information Network System. The CAPTAIN system was in an experimental stage from 1979 to 1984, and planned to be put to practical use thereafter. Participants in the experiment were 2,000 monitor families and 365 companies mainly from service industries, and such services were offered as information reference, reception of orders for books or commodities, notice of gatherings or entertainment. By 1984, the number of stocked pictures was 176,000, a quarter of them being pictures on hobbies, culture and entertainment and one tenth of them being pictures on education and learning. A hard-copy apparatus is attached to CAPTAIN receivers, and monitors can duplicate the TV screen any time it is required. Through this experiment, it became clear that the following two conditions must be satisfied for CAPTAIN system to be of any practical use. One is the cost reduction of terminal receivers and offered information. The other is to offer more valuable information which people really need.

Teletext

Teletext is a system which delivers, in parallel with normal TV programmes, news or weather forecasts or other programmes in the form of characters or patterns which are converted into digital data pulses and jammed into intervals of the normal programme's pulses. In this system, such information as the weather forecast, traffic situation, shopping, stock prices, hobbies, programme guide of radio and TV, public information or travel guide are broadcast in repetition. These programmes are compiled in advance and broadcast in fixed

order. Therefore the audience cannot search for their needed programmes but only select among the offered programmes. This is the biggest difference from the CAPTAIN system, but the cost of teletext is said to be far cheaper.

VRS

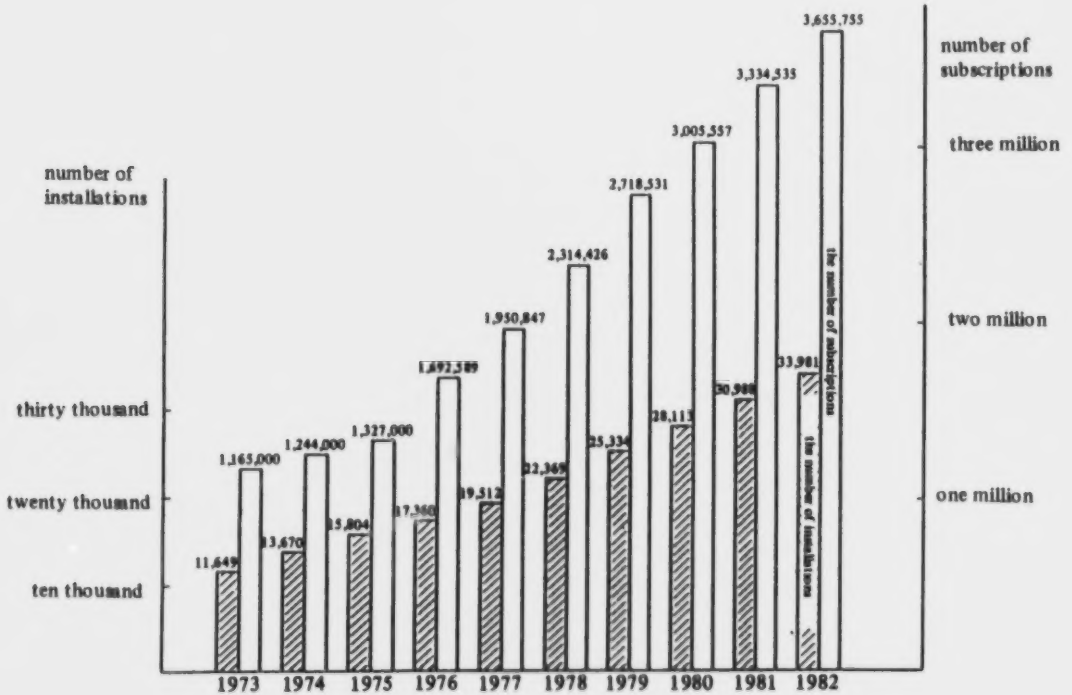
The Video Response System (VRS) is composed of a central information station and private terminal TV receivers with exclusive key-boards junction by broad band (4MHz) cable lines. The idea is almost the same as videotex (CATV system). The only difference lies in the fact that VRS connects centres and terminals, not with telephone cable, but with its own exclusive cable line. This enables VRS to offer not only standstill pictures but also dynamic pictures. At present, one system with 13 terminals at Tokyo and Osaka is being put to test.

CATV

Community Antenna Television or Cable Television (CATV) consists of a TV broadcasting station and private TV terminals interconnected by exclusive cables such as coaxial cables. The increase of CATV systems and their users is as Figure 5 shows. The number of CATV installations reached about 34,000 and subscriptions to them added up to 3.66 million (12 per cent of NHK subscription) at the end of 1982. Almost all of the existing CATV systems are very small (98 per cent have only 500 subscriptions or below), and installed, not for the purpose of broadcasting their own programmes, but to relay NHK's or private TV companies' TV waves to individual families' TV receivers which are located in the shadow of mountains or tall buildings and unable to receive TV waves on their own.

Only a modicum (0.4 per cent) of facilities are doing such broadcasting services as local-community news, public announcements, practical information for living, hobbies and entertainment. These facilities set unanimously the goal of activation or re-vitalization of community life, and are paying every effort to involve residents in the creation of community programmes. But residents' interests in CATV, if any, lean to entertainment programmes more often than not. Moreover, residents' needs for news, public announcements or practical information are already well satisfied by

Figure 5. Trends in the number of CATV installations and subscriptions to them
(taken from Japan Society for the Promotion of Information and Telecommunication, New Media Census)



TV, radio, newspaper and others. All in all, most attempts at autonomous CATV broadcasting are finding difficulty in acquiring enough subscribers to make a profit. It is well imagined that while autonomous CATV broadcasting is based on geographical communities, this present hardships will continue.

Two-way CATV system

This is a developed form of the CATV system in that it enables the reverse flow of information from each individual terminal to the central station through the use of highly effective coaxial cables or fiber optics interconnections. Through this, two-way CATV can perform all the videotex functions other than CATV's original functions.

An experiment with two-way CATV now famous in Japan is the Highly Interactive Optical Visual Information System (HI-OVIS) at Ikoma city in Nara prefecture. Ikoma city, located near Osaka, Kyoto and Nara, is a city with a long history and has developed rapidly as a bed-town of Osaka. The experiment was begun in 1978. The system is composed of a broadcasting centre equipped with a computer and studio with 168 monitor terminals equipped with microphone and TV camera. The three aims of HI-OVIS are: (1) broadcasting of its own community-based programmes; (2) demand-broadcast; and (3) relay broadcast of NHK or commercial TV.

As regards the demand-broadcast, it has two kinds of services. One offers dynamic pictures. In this system, which is very similar to the VRS system, people request their favourite programmes from among video libraries stocked at the central station. In a research administered to monitor families in 1982, 44 per cent of monitor families used this video service. It is expected that more people will come to use this system as the video library grows even bigger and bigger. The second service of demand-broadcast is the supply of stand-still pictures or characters which is very close to videotex or CAPTAIN. According to the above mentioned research, 29 per cent of monitor families used this service. Of the kind of information which they requested, by far the most was traffic information. In general, these kinds of information which are necessary to peoples' lives are quite well supplied by newspaper or other printed media. So it will be very difficult for CATV to replace them.

As regards the autonomous broadcasting of community-based programmes, various channels of residents' participation are devised. Among them, the one channel which is attracting public attention most is residents' participation in programmes through the use of TV cameras and microphones attached to each monitor terminal or through the use of yes-no keyboards (so-called tele-vote). This kind of audience participation is very important, because it is the very core of two-way CATV. But according to a research done in 1980, an embryo of an undesirable tendency is observed.

Out of 72 monitor samples, 20.8 per cent had no experience of participation, 19.4 per cent participated only once, 26.4 per cent participated 2-3 times, 33.3 per cent participated over 4 times. Here a tendency towards division of residents into those who are too reserved and those who poke their nose into everything may be observed.

The CATV conference is another important form of the utilization of two-way information flow. In this conference, the central studio performed only the role of switch, and active discussions between residents went on smoothly upon such matters as community's traffic problems and their educational environment. An interesting attempt at educational use of CATV is going on at Ikoma. This is the interconnection of the University of the Air with two-way CATV. Details are given in Chapter Three.

Chapter Two

COMMUNICATION DEVELOPMENT AND EDUCATION IN JAPAN

Mass communication and education at the early mass communication period

Outline. This period, as was described in Chapter One, extends from the 1920s during the rise of radio broadcasting and movies, to the 1960s when TV began to prevail. Among educational media, the ones which had the dominant authority in this period were print media, i.e. textbooks. Thus new media such as movies and the radio broke into the areas where print media were less prevalent or weak, and made inroads into the educational field.

The area with less print media prevalence was social education. Compared with school education in which materials used in class were restricted to the textbooks compiled or authorized by the state, the choice of materials used in social education was relatively wider. Value education and propaganda were the areas where print media were weak. Movies and the radio were not only used as supplementary materials in intellectual subjects; they played a significant role in propagandizing militarism during the Second World War and democracy in the post-war period.

The reasons why movies and the radio could advance into the educational field more smoothly than other media such as newspapers and magazines are as follows: (1) the attempts of movies and the radio to change fundamental characteristics of mass communication to become audio-visual educational materials in accordance with textbooks; and (2) movies and the radio were too expensive for individuals and individual families to afford, yet the media drew people's curiosity. Consequently, the showing of those media was enough to gather people and attract their attention.

Pre-war period

The use of movies in social education. The first use of mass media in the educational field was movies in social education. In

Japan, the socialism ideology began to prevail in the last years of the Meiji Era when industrial revolution was making progress. In 1911, a rebellion of anarchists disavowing the authority of the Emperor occurred, and two of them were executed. The same year, the Ministry of Education organized a research committee on social education and began to discuss measures to lead people's thoughts properly using mass communication media, or measures to prevent the undesirable influence of movies on the young, based on fact-finding surveys on publication, movies and lecture meetings.

In 1921, when the number of cinemas made a drastic leap, the popularity of movies was very high among people in urban and rural areas alike. Movies were the modern entertainment in which people were most absorbed. The Ministry of Education started a scheme to recommend educationally desirable movies in the name of the Ministry in this period. However, this scheme did not have a significant effect since the movies recommended by the Ministry were generally unpopular with audiences, especially in the regions with a high prevalence of cinemas.

Meanwhile, in rural areas where cinemas and other entertainment facilities were not abundant, a movement of travelling movies carried out by social education organizations and social education sections in each prefecture was a great success. News and events in cities, dramas on public morality and governmental policies were shown in places such as playgrounds of elementary schools, using films and projectors owned by the prefectural social education section or social education organizations. The movement which was started around 1920 was a sweeping success with the fullest participation in many parts of the country.

The use of movies in school education. The use of movies was mainly in the field of social education. It was in 1921 when the first purchase of a projector was made by a school. According to a survey conducted in Tokyo in 1931, among 175 elementary schools in Tokyo, 139 schools had held movie viewings in their hall, 54 schools had used movies in class. Films selected from ordinary movies were used in class, not educational films specially edited as school materials. The use of educational films on a large scale was started after the War.

War and movie education. The Movies Act enacted in 1939 marked the peak of the policies to induce people's value concepts

and thoughts in a desirable direction through movies, or to prevent the adverse influence of questionable films on the youth. This act granted the government the authority to prohibit children from viewing undesirable movies and to cut disagreeable parts in the films. It also obliged every cinema to include the Culture Films approved by the Ministry in the programme. The term Culture Film was derived from Kultur-Film(s), short educational and scientific films imported from Germany at that time.

The use of the radio in social education. The use of the radio, as well as the use of movies, was started earlier in social education. Radio broadcasting in Japan began in 1925 as a public project with the establishment of seven central broadcasting stations located in Sapporo, Sendai, Tokyo, Nagoya, Osaka, Hiroshima and Kumamoto. Due to its promptness, simultaneity and other features, the main mission of the radio was naturally considered to be news and reports, however, entertainment programmes, educational and cultural programmes were also considered to be important.

Since the start of radio broadcasting in 1925, educational and cultural programmes included religion, family, mothers' programmes, ladies' programmes, courses on literature, hobby, science and English, aired successively. As the number of radio receivers reached over 250,000 in the first year of radio broadcasting – far outnumbering the estimate – the feasibility of starting broadcasts exclusively for education was discussed. In 1931, educational broadcasting including vocational training programmes was started for the people who had finished compulsory education but could not receive secondary education.

The use of the radio in school education. The use of the radio in school education started with the broadcasting of school programmes by the Osaka Broadcasting Station in 1933. These radio programmes for schools included "Radio Gymnastic Exercises for School", "Infants' Time", "Midday Music", "Elementary School Children's Time" and "Teachers' Time". They were broadcast every day from Monday to Saturday and used in the vicinity of Osaka. In 1935, school programmes were started on the national network. The contents were, "Moral Stories in the Morning Meeting", "Radio Gymnastic Exercises for School", "Programmes for Each Grade", "Infants' Programme", "Teachers' Programme" and others. According to the survey conducted by the Japan Broadcasting Corporation

in 1941, among the schools which had radio receivers, 13-18 per cent of elementary schools and 11 per cent of secondary schools were using school broadcasting regularly.

The use of radio broadcasting in school education was distinctively dull compared with the situation in social education. There were a number of reasons such as the antagonism between the Ministry of Communications (presently Ministry of Posts and Tele-communications) and the Ministry of Education, i.e. the governing body of broadcasting and that of education. However, the essential reason was that face-to-face communication of teachers and pupils with textbooks as an agent had been successfully carried out in school education and there was seen to be little need to change it and to use other media. In 1941, the law prohibiting the use of materials other than textbooks compiled by the state in class was modified and school broadcasting approved by the Ministry of Education was made to be used in class. However, it was not easy for these programmes to be accepted and fitted in class as formal materials as textbooks were.

Post-war period

The use of the radio. The General Headquarters of the Allied Forces placed importance on the use of radio broadcasting and cinema as very effective means to reconstruct Japanese education destroyed by the defeat, based upon the idea of democracy. It could be effective because, first of all, at that time, the communication network through school facilities and the mailing system had not recovered after being destroyed and the use of the radio was the key as the medium of conveying orders and information concerning education from the national centre to local districts. For this purpose, just after the conclusion of the War, in 1945, the educational radio programme called "Teachers' Time" was restarted following the order of the General Headquarters. The radio drew attention, especially when teaching materials including textbooks were all burnt to ashes, as a substitute for these materials and many radio programmes were produced for educational purposes. Just after the War, scenes where pupils were having lessons with a radio set at the centre of a circle were common.

The Ministry of Education encouraged the use of the radio as an education medium and distributed quite a number of radio sets

free of charge, and as a result, in 1954, over 90 per cent of lower secondary schools in the nation had radio sets, among which 30 per cent (of schools) were utilizing broadcasting programmes for schools by NHK (Japan Broadcasting Corporation) (Table 7). Their use was increased to about 50 per cent in the 1958 survey (Table 8).

Table 7. Use of radio educational programmes
(NHK, Survey on the Use of Educational Programmes, 1954)

Possession of radio sets

	National schools	*Public schools*	*Private schools*
	(%)	(%)	(%)
Possess	98.6	92.9	96.6
Don't possess	1.4	7.1	3.4
N.A.	0.0	0.0	0.0
Total	81 (100.0)	13,598 (100.0)	

Use of educational programmes

	National schools	*Public schools*	*Private schools*
	(%)	(%)	(%)
Use	42.4	32.9	21.4
Don't use	57.6	67.0	78.6
N.A.	0.0	0.1	0.0
Total	80 (100.0)	13,598 (100.0)	

Use of cinema. The General Headquarters of the Occupation Forces put importance on the use of mass communication media as an effective means for propagating democracy in Japan and, among them all, cinema was considered most effective. From April 1947, the Civil Information and Education Section of the Occupation Forces started the free lease of American short films in order to supplement the shortage of Japanese educational films and to publicize

Table 8. Use of radio educational programmes
(NHK, Survey on the use of Educational Programmes, 1958)

Possession of radio sets

	National total	*Metropolitan areas*	*Local cities*	*Rural areas*	*Remote rural areas*
	(%)	(%)	(%)	(%)	(%)
Possess	95.0	94.9	96.7	96.3	87.5
Don't possess	5.0	5.1	3.3	3.7	12.5

Use of educational programmes

	National total	*Metropolitan areas*	*Local cities*	*Rural areas*	*Remote rural areas*
	(%)	(%)	(%)	(%)	(%)
Use	49.9	40.3	49.8	50.5	52.8
Don't use	50.1	59.7	50.2	49.5	47.2

American democracy. In May the same year, "the campaign to organize 6 million school children to see movies" was conducted. In 1948, the Civil Information and Education Section lent the Ministry of Education 1,300 film projectors and 650, 35 mm slide projectors free of charge and advised the Ministry to use them in social/out-of-school and school education. Stimulated by those movements, production of Japanese educational movies was revieved, and was activated year after year as shown in Table 9.

However, the international comparison on audio-visual libraries in 1970 showed Japan lagging far behind in the development in educational movies. The number of audio-visual libraries were 927 in Japan, 51 in England, 551 in West Germany and 52 in France. Yet, the number of staff and the budget for the management of the libraries was very limited in Japan. For example, all 551 libraries in West Germany possessed more than 1,000 films, whereas there were only 14 libraries in Japan which kept more than 1,000 films (Table 10). It seems that Japanese audio-visual libraries were generally with-

Table 9. Trends in the production of short educational movies (Survey by Educational Movies Association)

Year	*Number of companies*	*Number of films produced*
1946	14	84
47	27	125
48	47	171
49	43	209
50	46	231
51	64	233
52	83	304
53	105	372
54	111	445
55	135	473
56	185	676
57	182	688
58	193	768
59	196	861
60	199	970
61	204	1,100
62	215	1,127
63	222	1,186
64	199	1,135
65	178	995
66	186	996
67	195	1,179
68	214	1,286
69	225	1,304
70	227	1,502
71	227	1,375
72	234	1,496
73	222	1,577
74	228	1,493
75	257	1,448

Table 10. International comparison of audio-visual libraries (Survey by the Educational Movies Association, 1970)

	Japan	*France*	*West Germany*	*England*
Centre	0	1	0	1
Urban areas	45	22	14	50
Rural areas	882	29	537	50
Total	927	52	551	101

out substance. The reasons for this were that the social/out-of-school education, whose main target used to be working youth, became gradually less important as the rate of youths advancing to the upper-secondary schools and/or higher educational institutions increased. Another important reason was the overwhelming prevalence of TV.

Mass communication and education at the maturity of mass communication

Outline. This period extends from 1960 when TV started to spread until about 1980 when it reached its full prevalence.

TV has an entertainment function which can well be compared with the cinema, the best of dreams of the public at the emerging stage of mass communication, and it has a function of conveying news which is none the less inferior to newspapers and radio. TV had penetrated into the homes with such rapidity that the monopoly of the educational use of mass-media by the school or out-of-school educational institutions was ended. As a result, what happened was that the mass-media made inroads into each family without being controlled as the means of audio-visual education. Thus, the main problem of education during the above period shifted from how to utilize the mass-media to the passive strategy about how to eliminate the unfavourable influence of mass-media over education.

Change of children's life by the prevalence of TV. Children's lives during the days when there was no TV, consisted mainly of "playing", "studying" and "helping in household work" besides the hours spent at school. According to the survey on time allotment in life carried out by NHK in 1941, 5th graders of the primary school spent 9 hours for sleep, 2 hours for school lessons, 1.5 hours for helping in household work and the rest of the time was spent, 1.5 hours each, for studying and playing. Time consumed for the contact with mass-media such as to read or to listen to the radio was only 30 minutes. (Table 11)

The time allotment in life of 5th and 6th graders of primary school in 1960 when the prevalence rate of TV was 30 per cent and families only with radios co-existed, is shown in Table 12. The time consumed for the contact with mass-media such as radio, TV, newspapers and magazines increased to 2 hours which is four times as much when compared to the 1941 survey. In comparison, the time for

Table 11. 10-15 age children spending time on radio and TV (weekday)
(NHK, Time Budget Survey, 1960)

	Families with TV		*Families without TV*	
	boys	*girls*	*boys*	*girls*
TV	1°58'	2°10'	23'	14'
Radio	14'	16'	1°19'	1°25'

helping in household work decreased by half and time for self-care and rest decreased also. Leisure time increased a great deal, most of which was spent listening to the radio or watching TV. There is no question that the children of a family with only a radio listen to the radio for a long time while children of a family with TV watch it for a long time, but the survey showed that even the former were watching TV for 20 minutes a day (Table 13). This means that children of the family without TV were watching it at a friend's house or on the street (at the store).

The time spent for watching TV went on increasing corresponding to the spread of TV. A survey held in 1980, by which time colour TV sets were owned by almost all the families, shows that more than 2 hours a day were spent in viewing by primary school children, lower secondary or upper secondary students. Children's leisure time was 4 hours which meant that half of their leisure time was used for watching TV. There also is a survey on TV watching by infants and this reveals that most of the infants of 3 years old understand the content of TV programmes and start habitual TV watching. The length of time for it reaches as much as 3 hours (Table 14). Today, it is impossible to remove TV from children's lives.

Influence of TV over the development of children. Since around 1960 when TV started to penetrate into homes, people have been worried about the toxic influence of TV over children. This is because children expect to be entertained by TV, just as adults do, and it is impossible to shut out children from looking at the entertainment programmes which adults prefer. Adults consider that even fairly harmless entertainment programmes for those children with mature judgement could easily be very toxic for those children with immature judgement. Thus, adults are worried that by watching TV,

Table 12. Time budget of 5th grade pupils at elementary school
(NHK, Time Budget Survey, 1941)

	Sleeping	*Taking meals*	*Doing arrange-ment*	*Taking class lessons*	*Doing home-work*	*Going to and com-ing back from school*	*Work and errands*	*Taking a rest*	*Playing*	*Culture (reading, listening to radio)*
Boys	9° 35'	49'	52'	6° 02'	1° 21'	56'	1° 21'	48'	1° 46'	30'
Girls	9° 29'	49'	57'	6° 00'	1° 27'	59'	1° 42'	48'	1° 23'	24'

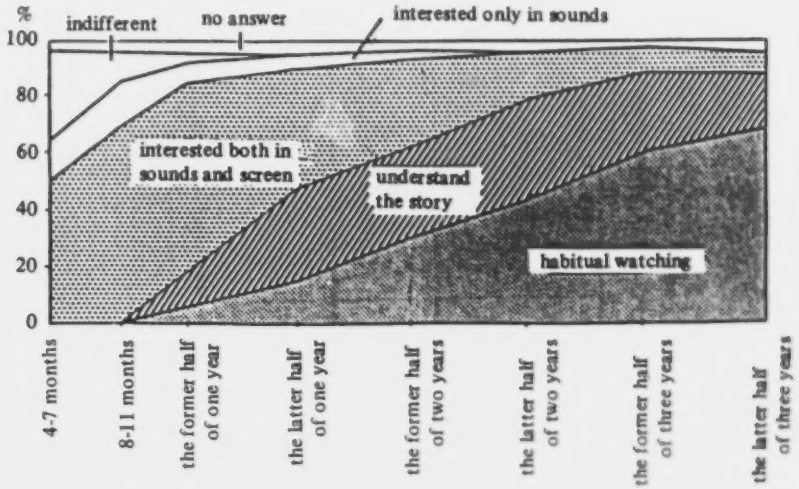
Table 13. Time budget of 5th, 6th grade pupils at elementary school (weekday)
(NHK, Time Budget Survey, 1960)

Sleeping	*Taking meals*	*Doing arrange-ment*	*Studying outside home*	*Studying at home*	*Locomo-tion*	*Work and errands*	*Taking a rest*	*Associa-tion*	*Playing*	*Newspaper magazine radio TV*
9° 25'	46'	34'	6° 41'	58'	27'	48'	31'	3'	1° 38'	2° 02'

Table 14. TV and infants: infants' spending time on TV
(NHK, Survey on TV and infants' life, 1979)

	Watch TV only	*While doing other things*	*Total time*
Zero year old (over 4 months)	28'	36'	1° 04'
One year old	53'	1° 31'	2° 24'
Two years old	1° 34'	1° 26'	3° 00'
Three years old	2° 00'	1° 33'	3° 13'
Four years old	1°42'	1° 16'	2° 58'
Five years old	1° 35'	1° 07'	2° 42'
Six years old	1° 48'	58'	2° 46'

TV and infants: infants attitudes towards TV



children might copy violence and crime, might have a biased image on sex, might stop studying, might dream to become a star rather than to be diligent workers and thus learn various unfavorable attitudes and activity models.

Starting with such anxiety, surveys and experiments on the bad influence of TV over children have been conducted frequently since 1960. The innumerable survey results are not always consistent, however there are some comparatively common points:

1. The time which children were deprived of by watching TV was the time which used to be consumed for contact with other mass-media such as listening to the radio or going to the cinema, which are rather similar kinds of activities. Also, time for taking a walk, or other activities with no specific purpose were replaced by TV watching.

2. There is no evidence which proves that TV has hindered the children's intellectual development.

3. TV programmes with violence surely help increase the children's violent behavior.

4. There is no clear evidence that TV aggravates passivity and escapism of children.

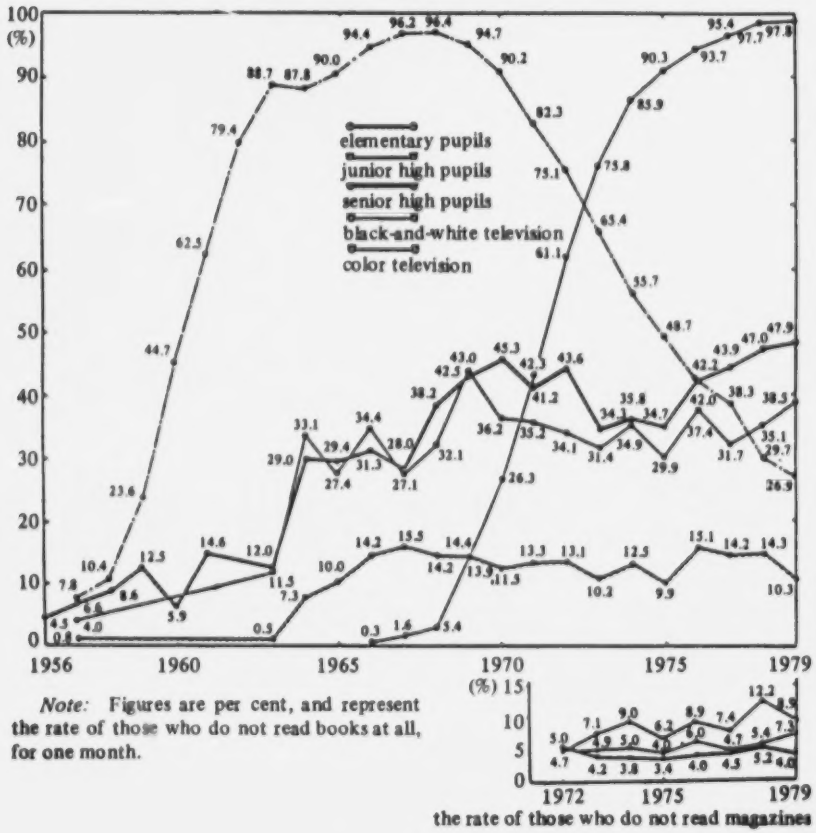
5. It can be said that TV is one of the many factors which influence the formation of views of life and values.

6. Fashionable words, the product of TV, last only for a short period and the extent of confusion in the children's speaking manner by this is negligible.

TV and reading. As stated above, the impact of TV over the intellectual and emotional development of children is not always clear. It is natural that TV's influence over children differs from person to person because even if they watch the same violent or sexual scenes on TV, the personality of the accepting children and their geographical and cultural backgrounds are different. However, what every survey points out is that the emergence of TV has changed the pattern of children's contact with the mass-media: that is, a decrease in time spent listening to the radio or seeing cinemas as was described before. In other words, the radio and cinema have been replaced by TV.

It is not merely radio and cinema that have been pushed out. Interest in reading has also been severely affected. Since 1954, a survey on a large scale concerning the reading habits of primary school pupils and lower/upper secondary school students has been continually carried out. This survey revealed that during the period from 1963 to 1964, the number of those who did not read any books including comics and magazines suddenly increased; at primary level from 0.5 per cent to 7.3 per cent, at lower secondary level from 11.5 per cent to 33.1 per cent, at upper secondary level from 12.0 per cent to 29.0 per cent, and this fact drew the attention of a large number of people. As is shown in Figure 6, one of the causes

Figure 6. The spread of TV sets and the increase of pupils who do not read books
(taken from Shigeo Osada, Why don't children read books?)



Note: Figures are per cent, and represent the rate of those who do not read books at all, for one month.

the rate of those who do not read magazines

of such a tendency of children not to read books is TV. The rate of non-readers and the rate of TV possession correlates perfectly. Also, the percentages of those who do not read magazines and comics are 5 per cent, 10 per cent and under 5 per cent at primary, lower secondary level and upper secondary level, respectively, which means that the number of children who do not read books but like magazines and comics has greatly increased.

Use of the TV school programme. TV has made its inroads into schools while becoming an important component of children's lives. The TV school programme started simultaneously with the start of TV broadcasting in 1953, and in 1959 a special TV station for educational programmes (NHK Educational TV) was opened. It started the school programmes which covered all the subjects by grade from kindergarten to upper secondary school. The use of these programmes at primary school level, as is shown in Figure 7, was only 10 per cent in 1959 but it went up to 60 per cent in 1961 and this tendency continued thereafter. The number of TV sets installed in schools increased dramatically and at present there is one TV set in each classroom at primary school level.

Figure 7. The use of TV programmes at schools
(NHK, Survey on the Use of Educational Programmes, 1958)

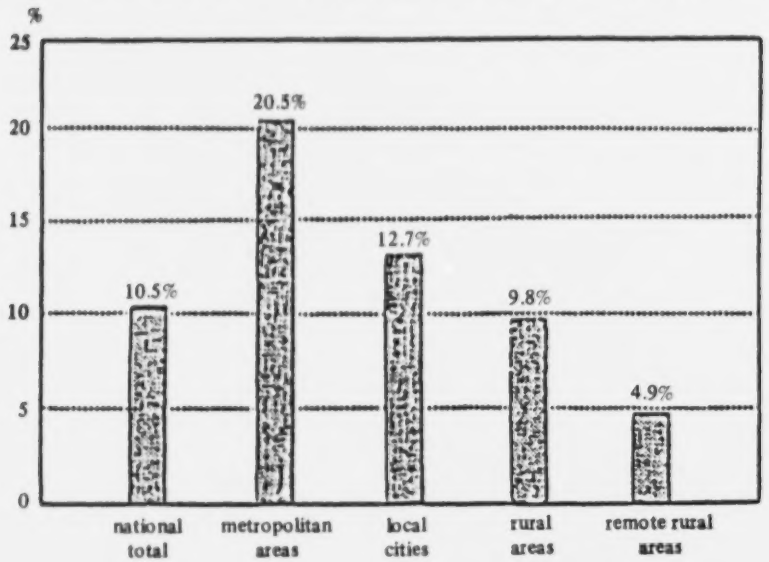
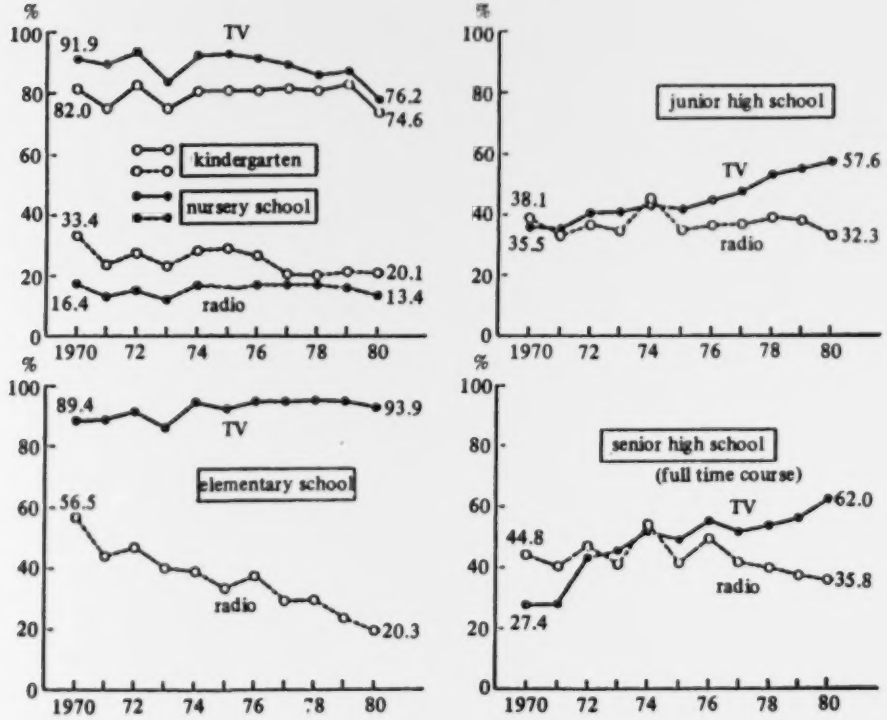
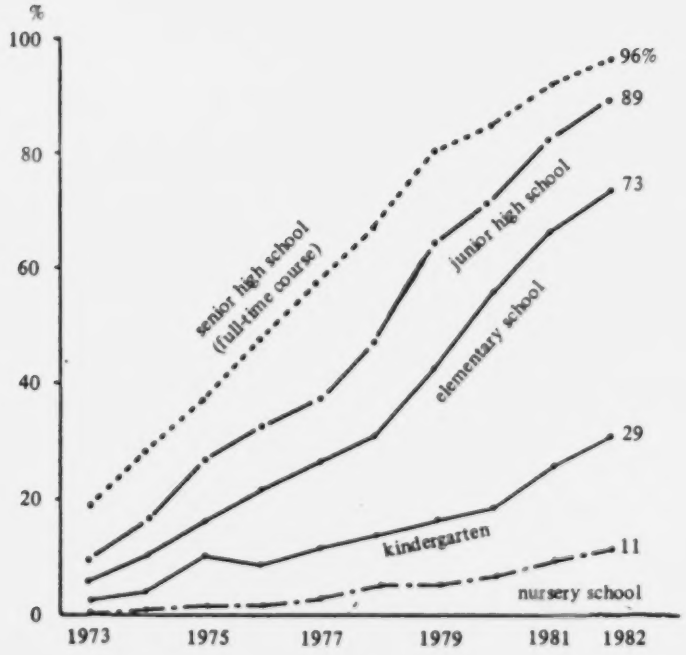


Figure 8. Trends in the use of NHK educational programmes (100% = all schools)
(Survey by NHK)



Following the widespread of use of TV school programmes, the main medium of broadcasting used in schools shifted from radio to TV (Figure 8). The spread of VTR also contributed to this trend as shown in Figure 9. At primary school, use of such programmes are mainly when they are on air, but at lower/upper secondary schools where teachers have their own speciality subjects, the programmes are recorded and used at their convenience in most of the cases. Which subjects are being used? In primary schools, science study, social study, and morality are greatly used; while at lower secondary schools, science programmes, and at upper secondary schools science programmes and home room activity-related programmes are well used. The conventional use of radio and cinema used to be centred on physical education and morality but now the use of academic curriculum has become more used.

Figure 9. The spread of colour VTR
(NHK, Survey on the Use of Educational Programmes)



Use of TV in social/out-of-school education. After the start of TV in 1952, a tendency toward the use of broadcasts for social/out-of-school education developed; especially after the Teleclub movement held in Aisne Prefecture in France in 1956. Stimulated by its success, the Ministry of Education, NHK and the Japanese National Commission for Unesco started collaborating in a pilot group movement with audio-visual aids for rural areas. However, even among rural areas, the prevalence of TV was astonishingly advanced and each family possessed a TV set, which contributed to the deterioration of the said pilot movement.

Mass communication and education at the dawn of the medium communication age

Outline. The new age which is now emerging is the period of medium communication which will be brought about by the combination of tele-communication, TV and computer. This form of communication is now being established as seen in a case of TV conferencing among the main office of a company, its branches and factories in remote towns. At the same time, use of wired TV with which useful information for the district people is conveyed, or feedback of their opinions and questions is made, has been continued on an experimental basis. Unfortunately, these experiments with community wired TV have not borne fruit because of the following reasons:

1. The necessary information for the district people was conveyed fairly well by the existing mass-media or commercial media such as TV, newspapers, advertising leaflets and information network of municipal bodies; and

2. The information transmission by wired TV is still quite expensive.

Such being the present situation, the application of new communication techniques like wired TV is apparently most suitable, not for geographically selected community groups, but for groups of people with common intellectual or learning purposes. This period coincides with the time when people are becoming bored with the stereotyped entertainment programmes, or watching favourite films recorded on video-tape recorders; and becoming dissatisfied with the massive outflow of commercial ads. They are beginning to look for

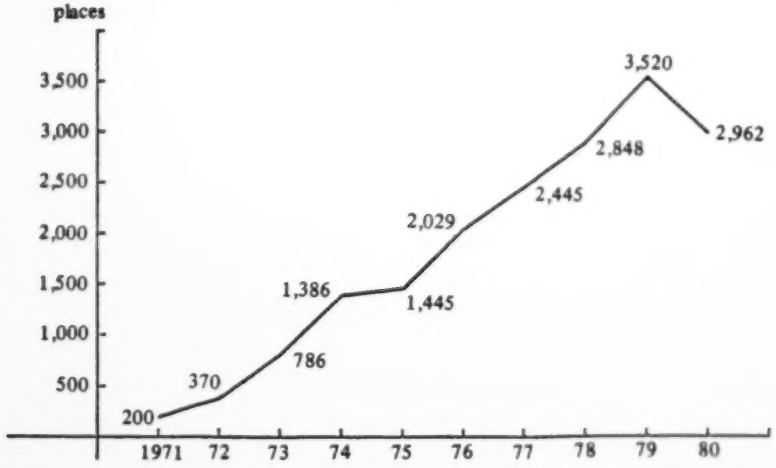
special magazines introducing merchandise to suit their interest. Also at this period, people are tired of simply watching TV in a passive manner and they are starting to attend various classes providing lessons on hobbies or sports. Further, the people's awareness of the pursuit of lifelong education has reached its peak and the once retarded use of TV for social/out-of-school education seminars is regaining its old day vigour. This tendency is now extending not only into adult society but into the children's world. Time spent by children watching TV is decreasing compared with 10 years ago. The rate of watching educational TV is higher with children than with adults.

The key of the coming medium communication age is the computer. But for computers, telecommunication and TV would neither be combined or controlled and two way communication which is the most important characteristic of medium communication would neither be realized. Therefore, whether the medium communication age using new communication technology will arrive actually or not depends upon how familiar the people can be come with computers; in other words, how they can acquire computer literacy. For this purpose, it will become an essential matter to introduce the computer into school education and let children be come used to it.

Japanese policy on this point is, however, a bit behind as is stated in the next chapter. The use of computers in primary school classes and information processing education at upper secondary schools have just started. However, children have flexibility. Children, brought up with TV but who are not captured by TV, are finding new pleasure in playing TV games and further in making programmes of new games operating personal computers. They are preparing themselves to be ready to live in the age of medium communication with computers.

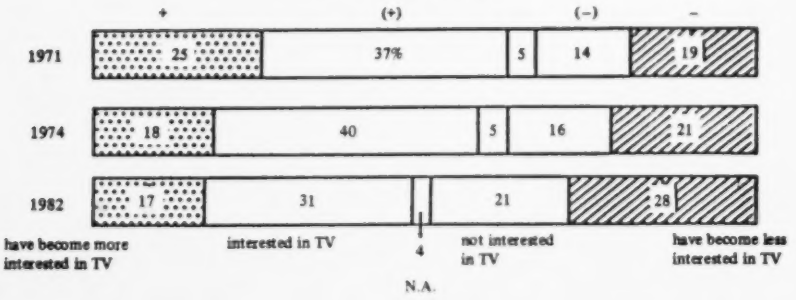
Appearance of lifelong education using broadcast. After 1970, once retarded social/out-of-school education using broadcast material regained its vigour. Figure 10 shows the transition of the numbers of cases in which social/out-of-school education is practised using broadcasts mainly by NHK. In it the increase in the number of social/out-of-school education programmes using broadcasts after 1970 is seen. Two factors can be pointed out as the causes of the above trend. For one thing, correspondingly with the increase of

Figure 10. Trends in the use of broadcasting in social education
(Survey by NHK)



leisure time, people's activities performed during the time are becoming more positive, personal and independent and accordingly, the wish to learn something with a certain purpose rather than to spend time watching TV for a long time with no purpose has risen highly. Figure 11 shows the change of people's interest toward TV from 1971 to 1982. This statistic shows that the number of people who lost interest in TV increased by 9 per cent from 19 to 28 per cent.

Figure 11. Trends in peoples' interest in TV
(Survey by NHK)



Also Figure 12 indicates the change of form of joy people feel when watching TV from 1969 to 1979. We can understand this by reading the negative attitudes such as, "watching TV is better than doing

Figure 12. Decrease of pleasure with watching TV
(Survey by NHK)

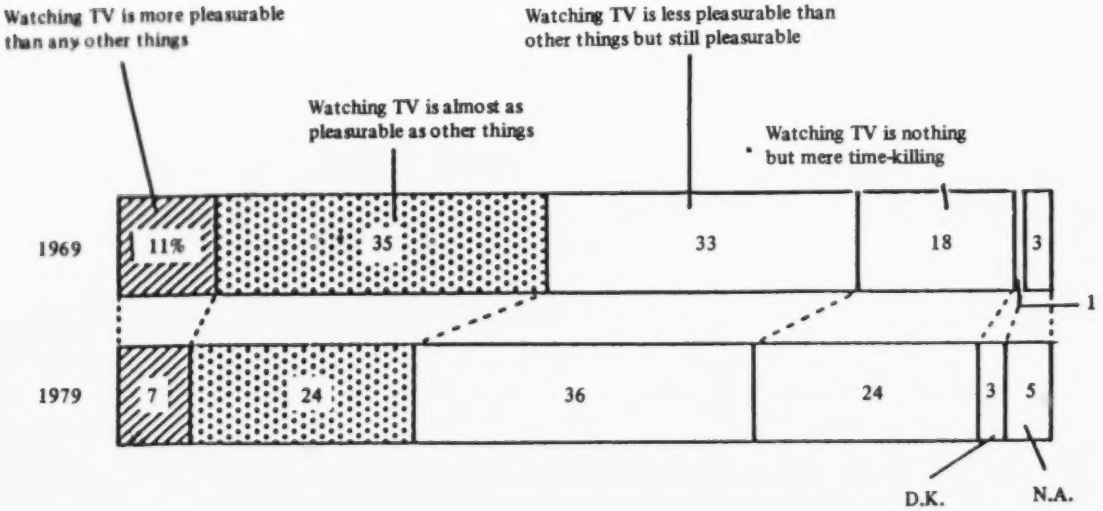


Figure 13. Increase of TV watching alone
(Survey by NHK)

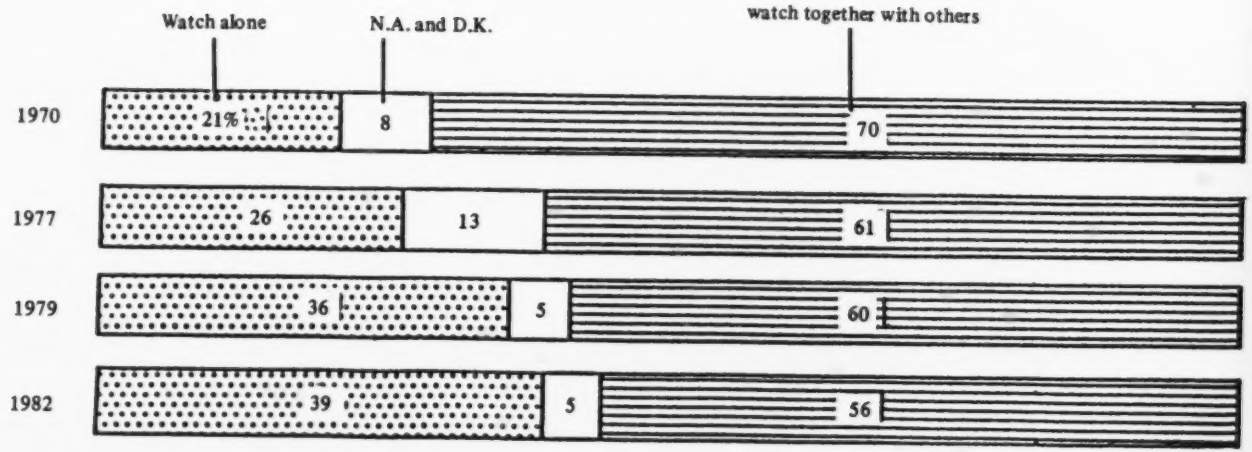
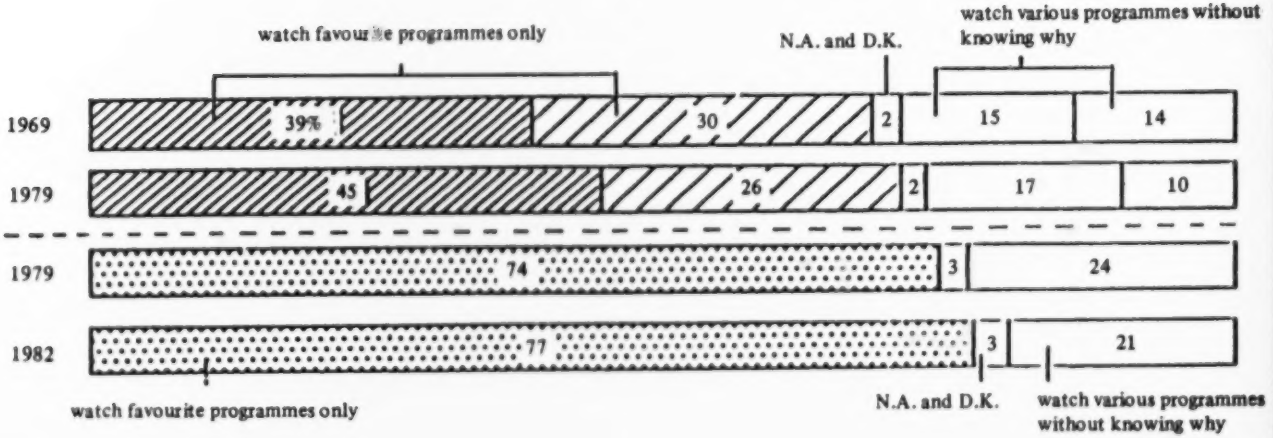


Figure 14. Increase of selective TV watching
(Survey by NHK)

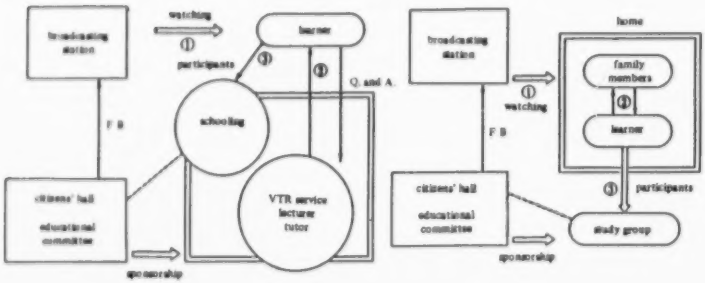


nothing as a way of passing time but it is nothing more than to console boredom" or "to do something else is more enjoyable but watching TV is not also bad".

Besides the tendency of leaving TV, the manner with which people watch TV is changing obviously. Figure 13 shows the change of people's manner with TV. According to this, those watching TV with others has decreased and those watching TV alone increased in number during the last decade. Figure 14 shows that those who watch various TV programmes without certain purpose are getting to be the minority. Judging from these, since the start of the 1980s, tendencies to use TV with a purpose as well as of getting away from TV are observed to be fixed.

The second reason for the increase of social/out-of-school education using broadcast material was that the producers'/transmitters' side developed a multi-media-system which enables two-way communication by creating various devices such as providing schooling, discussion study course and counselling besides merely transmitting broadcasts (Figure 15). This effort brought success by fulfilling the positive and independent wishes for lifelong study which were arising among people.

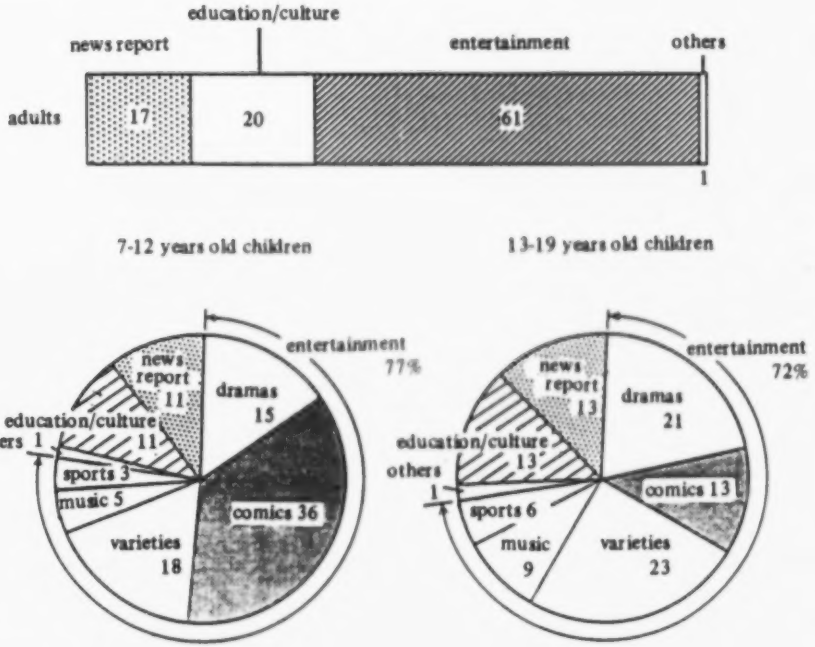
Figure 15. Use of TV broadcasting in social education



Such success of social/out-of-school education using broadcast material casts a bright hope for the University of the Air which has just been launched. The University of the Air will be explained in detail in the next chapter.

Change in watching TV by children. Figure 16 shows how TV is watched by adults and children dividing the programmes into three: news report; education/culture; and entertainment. According to this figure, 61 per cent of the programmes adults watch are entertainment whereas over 70 per cent of those watched by children are entertainment. It can be said that children expect the entertainment factor from TV more than adults. However, on the other hand, a 1980 survey shows that the rate of those who watch educational TV is largest with the 7-12 years age group at 44 per cent. This figure includes educational school programmes, so, to be fair, if day-time hours are eliminated and the results confined to evenings only, boys of 7-12 years of age still (top the rating for) watching such pro-

Figure 16. Programmes which people watch on TV
(Survey by NHK)



grammes. This suggests that if the content or programme arrangement, are well made to meet their needs, children will watch more educational/cultural programmes.

Next, it is clear that the phenomenon of adults leaving TV is happening in the children's world, too. Table 15 shows the distribution of time for watching TV by children in 1971 and 1982.

Table 15. Distribution of time spent on TV watching (weekday)
(NHK, Audience Measurement Survey, 1982)

	Don't watch	*–1 hour*	*1–2*	*2–3*	*3–4*	*4–5*	*5–6*	*6–7*	*7–8*	*8 hours–*
Elementary pupils	10 (4)	26 (20)	31 (31)	16 (25)	9 (11)	3 (5)	2 (3)	0 (0)	0 (0)	1 (0)
Junior high pupils	14 (6)	25 (21)	23 (28)	17 (23)	9 (12)	7 (5)	3 (3)	1 (1)	1 (1)	1 (0)
Senior high pupils	10 (8)	20 (19)	27 (26)	18 (19)	10 (14)	6 (8)	5 (3)	2 (1)	1 (1)	1 (0)

According to this table, the number of children who do not watch TV through all the day is increasing, by and large, from 4 to 10 per cent at primary school level, from 6 to 14 per cent at lower secondary level and 8 to 10 per cent at upper secondary level. Also the number of children watching TV less than one hour is increasing and those watching it over one hour is decreasing. Time consumed by children watching TV can be said to be certainly decreasing.

Lastly, the tendency of watching TV in a spontaneous and selective manner which is taking place among adults is also being seen in the children's world. According to a 1984 survey, 32 per cent of children had a VTR at home. Of those without, 84 per cent answered that they wanted it. Consequently, if the VTR becomes more widespread in the future, children will learn to watch only their favourite programmes in a selective manner.

Table 16. Changes in boys favorite things
(Survey by Japan TV Network Society)

	1974	*%*	*1975*	*%*	*1976*	*%*	*1977*	*%*	*1978*	*%*	*1979*	*%*	*1980*	*%*	*1982*	*%*	*1983*	*%*
1	baseball equipment	50	baseball equipment	62	baseball equipment	57	baseball equipment	56	radio control model	59	TV game	57	money	52	money	67	money	63
2	astro-nomical telescope	47	money	55	astro-nomical telescope	51	plastic model kit	43	baseball equipment	49	radio control model	54	fishing tool	50	set of games	62	plastic model kit	53
3	plastic model kit	46	camera	53	camera	50	money	42	plastic model kit	48	plastic model kit	46	radio control model	49	plastic model kit	61	TV game	52
4	set of games	42	large garden	51	deluxe bicycle	48	deluxe bicycle	42	money	47	model	46	camera	48	TV game	55	set of games	50
5	tranceiver	42	tranceiver	50	money	45	camera	42	camera	45	set of games	44	set of games	47	large garden	53	game watch	45
6	bicycle	41	bicycle	49	stamps, coins	45	astro-nomical telescope	36	deluxe bicycle	41	baseball equipment	41	TV game	46	large house	51	fishing tool	44
7	personal room	39	astro-nomical telescope	47	plastic model kit	41	set of games	35	tranceiver	39	large garden	41	large garden	44	fishing tool	48	large house	44

Table 16. Changes in boys favourite things (Survey by Japan TV Network Society) *(continued)*

	1974	%	*1975*	%	*1976*	%	*1977*	%	*1978*	%	*1979*	%	*1980*	%	*1982*	%	*1983*	%
8	tape recorder	39	play ground	44	watch	40	comic book	34	large garden	39	fishing tool	40	plastic model kit	43	camera	46	comic book	44
9	watch	39	large house	42	fishing tool	38	large garden	30	large house	36	model railroad	40	tranceiver	42	comic book	46	large garden	43
10	play ground	38	plastic model kit	41	large garden	38	play ground	29	TV game	36	watch	39	watch	41	pet	43	personal computer	41
11	camera	36	fishing tool	40	micro scope	36	fishing tool	29	comic book	34	comic book	39	comic book	39	personal computer	40	personal color TV	39
12	stamps, coins	35	watch	39	set of games	36	minicar, racing-car	29	fishing tool	33	deluxe bicycle	39	astro-nomical telescope	38	baseball equipment	39	baseball equipment	36
13	large garden	34	set of games	39	model railroad	33	car, sports car	28	set of games	33	large house	37	deluxe bicycle	37	personal room	38	pet	36
14	large house	34	sports uniform	38	personal room	32	tranceiver	28	radio cassette	33	astro-nomical telescope	37	baseball equipment	36	play ground	38	radio control model	36
15	model railroad	34	micro scope	37	large house	30	stamps, coins	27	astro-nomical telescope	32	camera	37	micro scope	35	head phone stereo	36	play ground	36

Table 16. Changes in boys favourite things (Survey by Japan TV Network Society) *(continued)*

	1974	%	*1975*	%	*1976*	%	*1977*	%	*1978*	%	*1979*	%	*1980*	%	*1982*	%	*1983*	%
16	fishing tool	32	railroad model	30	play ground	27	sports uniform	32	play ground	35	personal room	35	stamps, coins	35	radio control model	36	astro-nomical telescope	34
17	animals, birds, fish	26	stamps, coins	36	sports uniform	29	watch	26	stamps, coins	31	micro scope	33	play ground	35	watch	36	camera	33
18	book	26	personal room	35	fountain pen	29	personal room	24	personal room	29	play ground	32	large house	35	astro-nomical telescope	36	animals, birds, fish	33
19	comic book	26	comic book	33	tranceiver	28	large house	24	watch	28	tranceiver	30	model railroad	32	deluxe bicycle	33	autograph of favorite person	32
20	roller skates	25	book	31	animals, birds, fish	28	animals, birds, fish	21	minicar, racing car	27	animals, birds, fish	29	personal room	30	model railroad	33	head phone stereo	32

Additionally, Table 16 shows the transition of what children (in this case boys) want to have from 1974 to 1983. We can see from this that TV games are becoming quite popular among children and the personal computer is also gradually getting popular among children. It is observed that among children, their interests are changing from passively watching TV to selecting only favourite programmes, from only watching TV to playing games using the TV, and one step further to playing with computers.

Children are unconsciously becoming adjusted to life in the computer society of the future, one can say. This fact highlights the hope for the future of computer education in schools. The present situation of computer education will be stated in detail in the next chapter.

Chapter Three

EDUCATION AT THE DAWN OF MEDIUM-COMMUNICATION AGE

Policies for the introduction of computers into school education

Among the educational uses of "New Media" in Japan, it is the computer which attracts the most attention. Concerning computers and education, the concepts of two terms are often confused. One is "Education by Computers", and the other is "Education of Computers". The point in which the computer differs from the usual instructional media is that, a child may be deprived of his/her life chance if he/she cannot use a computer. This did not happen with OHP or TV. Therefore, it is not only important to teach with computers, but in teaching with computers, in an indirect manner, there must be some teaching about computers.

The Ministry of Education in Japan seems to be slightly behind, in coping with the computer. The Ministry of International Trade and Industry, the competent authority on computers, first showed a move to embark on computers and education. This meant to aim at the improvement in the quality of software for computer assisted instruction (CAI). However, the Ministry of Education began to show an enterprising attitude to come to grips with computers recently. First, the "Investigation on the educational uses of microcomputers" was conducted in January 1983, for the comprehension of the actual conditions. Then "microcomputers" was added for the first time as an article to the "Fact-finding investigation on the audio-visual education equipment among schools and social educational facilities", a comprehensive investigation into audio-visual apparatus which the Ministry of Education carries out every third year.

Since September 1983, the Social Education Council in the Ministry of Education has deliberated on the topic "concerning the educational use of the New Media as it ought to be"; a subcommittee on the educational uses of microcomputers was to be

set up as its sectional meeting. The sub-committee was concerned with the standard contents of in-service training regarding the educational uses of micro-computers, with participants in education as objects, and the "Proposal of the standards for the in-service training for educational uses of micro-computers" was announced officially in March 1984. In introducing microcomputers into the practice of education, it was concluded necessary to give the teachers in-service training on manipulating microcomputers. The Ministry of Education included this in the "Course for the leaders of audio-visual education" which is held every year, and carried into effect in July 1984.

Also, the Social Education Council of the Ministry of Education published the "Interim Report – Concerning the use of micro-computers in education" in January 1985. This report, composed of three chapters, describes the possibilities of the infiltration of computers into the society bringing a great change in both the content of education and education methods, in an age highly oriented to information. It touches upon the points to be paid attention to in using microcomputers in education, and mentions the various conditions necessary for using microcomputers in education. These conditions include: in-service training of teachers, development of excellent software, establishment of the evaluation-system for educational software, establishment of teaching material data and attention to health.

Following this report, 11 million yen as the expenses for "new education apparatus and educational method development research commission", and 2 billion yen as subsidy for "support for the said equipment" were admitted in the budget for fiscal 1985. It is said that equipment expenses for the microcomputers to be introduced into schools in the following four to five years will reach the sum of 20-30 billion yen.

Subsequently, the Ministry of Education launched the "Meeting for collaborators in investigations and researches concerning elementary and secondary education answering to the information-oriented society as it ought to be" in February, 1985. Its 13 members consist of specialists in CAI, scholars, and primary and secondary school teachers. The Chief of Data-Processing Promotion Section from the Ministry of International Trade and Industry takes part as an observer. Topics such as the basic attitudes of schools in

computer uses, and the planning of standard proposals and development of software suitable for uses in school education, are to be examined at the meeting; that is, what are the means of introducing microcomputers into the actual fields of education? The Ministry of Education is hoping to draw up a basic policy in the summer or 1985 and a definite plan by spring 1986.

The present state of the use of computers in elementary and secondary education

Outline. In the existing circumstances, the individual efforts of teachers mostly support the educational use of computers in elementary and lower secondary schools. Only a few schools make wide use of computers. The following are some of the examples of practices. Examples of the use of CATV of Nara Prefectural Mayor's Board of Education, and examples of the uses of videodiscs and videotex can be mentioned as well. Today, the educational use of computers is the central current of elementary and lower secondary education. Even if not used as CAI, the processing of academic records by statistic package and the development of independently printed materials by word-processors, are taking place in some form among all schools. The consumers of microcomputers are chiefly the teachers and the students.

Examples

Takezono Elementary School, established by Sakura Village, Ibaraki Prefecture

A pioneer-like elementary school in CAI use, it was started as an experiment by Tsukuba University, Academic Information Processing Centre. The computer was also developed especially for the experiment. It is used for science, arithmetic, and Japanese; it is divided into tutorial courses and drill courses. In the case of fourth graders, 8 to 12 hours of arithmetic and 13 to 16 hours of science are possible to be put into practice. Tests are given after a certain amount of study, and the markreader runs over these answer sheets and outputs the evaluation charts.

Shinjo Lower Secondary School, established by Shinjo Town, Nara Prefecture

This school holds 46 microcomputers for academic record processing, evaluation, sports tests, and computer managed instruction (CMI) related with clerical work as well. One hour out of the four hours of the "non-academic period" is spared for acquaintance of fundamental knowledge for the use of personal computers. Teaching materials are prepared independently using word-processors.

Kohoku Upper Secondary School, established by Tokyo Metropolitan Government

This school holds 52 sets of microcomputers which are used in mathematics, science, physics and chemistry classes. Microcomputers are concentrated into a special room so that each student can study with his/her own microcomputer. In the mathematics classes, they are used in the study of understandings of mathematic concepts through computers and of the programming itself; and in the science classes, for individual studies where basic problems are incorporated into the programmed learning. Teaching materials are prepared by the teachers themselves.

Konan Elementary School, established by Himi City, Toyama Prefecture

Six years ago, a young teacher began to grapple with CAI. He thought of using microcomputers to prevent any drop-outs; he decided to use LOGO, and taught himself this language. Since there existed no documents on LOGO written in Japanese at that time, it took over six months to manipulate LOGO. However his pupils now master LOGO in approximately two months. He teaches the language during the arithmetic, drawing and manual crafts classes. Also, there are classes in which they simulate the movements of the stars and constellations. The students pick one favourite constellation among the 22 constellations that appear in winter nights, and make guesses how the constellation is going to move with time, which the teacher visualizes with the picture input device; then, move it using microcomputers, and finally compare it with the actual movements.

Hiroo Lower Secondary School, established by Shibuya Ward, Tokyo

The use of microcomputers was begun in this school to allow thorough individual guidance. A special classroom is established for studies using microcomputers, and one microcomputer is provided for each desk. Each one of these microcomputers is connected with the one at the teacher's desk; the construction work, such as these hook-ups, was done entirely by the teachers, and they also produced the teaching materials. Uses for mathematics classes are frequent.

Nozomi Kindergarten, Fujisawa City, Kanagawa Prefecture

Microcomputers are used for studies such as comprehension of dimensions and understanding of numbers in this kindergarten. Children manipulate microcomputers as some kind of game and not as a formal study.

Toyohashi City Audio-Visual Education Centre, Aichi Prefecture

In Japan, audio-visual education centres and audio-visual libraries are established for each local government to promote concentrated management and co-operative use of audio-visual education equipment. Audio-visual education centres provide services of audio-visual aids just as libraries carrying out the services of books and publications, with software and hardware controlled collectively, and under rental services. Furthermore, in-service training of teachers is given on audio-visual education.

The audio-visual education centre of the city of Toyohashi carries out the rental services of audio-visual educational equipment, data reference, and statistics processing work using two units of microcomputers; they are also applied to references for research documents, and reference by titles and keywords is made possible along with the teaching materials. Moreover, various educational information brought about within the schools of the city is processed at the audio-visual education centre as well, and a plan to constitute a network for educational information processing is in progress, by setting up microcomputers in several schools.

Conference for the Chiba Prefecture, Asahi Region Educational Information Centre

This conference is also a kind of an audio-visual education centre, and has started a study information service by the online system of microcomputers taking advantage of public circuits. Study information for class improvement is able to be provided promptly to schools on-line. Presently, data of elementary school social studies lessons are being input.

The present state of the use of computers in higher education

Outline. When considering the problems of education and communication at a higher education level, there is a need to think in several spheres: one is the instruction level, the others are the institution and the research levels. It is also necessary to consider from both domestic and international planes.

On the instruction level, the problems mostly centre around how to overcome the classes being limited by a one-sided communication from the professor to the students. On the institution level, the problem lies in the intercollegiate and interdepartmental communication. There exists almost no intercollegiate communication. There are many universities that have no interdepartmental informative circulation within the same university. Relationships between universities and institutions other than universities are extremely alienated. On the research level, the problem consists of communication between academic fields. It can be said that there is no communication network among different academic fields, although the word *gakusai* (interdisciplinary) is used. Besides, the language barrier restrains the international exchanges in academic and educational spheres. Characteristic examples of how the Japanese higher education is coping with these three problems, are presented in the following.

The use of computers at the level of instruction

Traditional instructional system. Traditionally, classes are mostly held in lecture style in Japanese universities. Also, as a rule, university classes are not open to the public. University teachers make very rare use of instructional media as well. A kind of relationship close to an apprentice system still exists in Japanese

universities which insist on these traditional instruction methods; alumni often continue to keep in touch with their alma mater. They get in contact with their universities they graduated from, on every occasion, and use the universities as some sort of resource centres. Therefore, students who have graduated from universities fulfilling in abundance their function as resources, are able to hold advantageous positions when they go out in the society.

Conventional universities in Japan hold contacts with the society through their alumni, but have no media through which courses, and community open-university education centres are established in Tohoku University and Kanazawa University. Besides this, a university education research centre is established in Hiroshima University.

1. *Niigata University*

Niigata University, Department of Education uses a system in which video-tapes accumulated by the Centre for Research and Instruction of Educational Practice can be controlled remotely. The automatic video-tape storehouse within the centre allows the selection of video-tapes and the loading of the video-cassette tape-recorder (VCR) to be done automatically. The storehouse can hold up to 40 U-matic tapes; out of them, a video-tape is selected upon request from classrooms and projected on either the video screen or the television screen. This is a sort of an equivalent to a robot. Previously teaching materials belonged individually to each teacher, which resulted in hindering their co-operative use, and some of these teaching materials were often hoarded however valuable they might have been. The idea of a media centre such as this, is fairly rare in Japanese universities.

Also, still images can be called upon remotely from classrooms using the still image diskfile. One disk is capable of holding up to 15,000 still images. Because of the enormous number of images that can be input, the production of the data-base of still images is made possible as well, allowing an instantaneous reference of a given still image. If interlocked with computers, development to CAI which follows realistic still images, becomes possible. Such a system as this frees teachers from transporting VCR's, 16mm-film projectors and slide projectors.

2. *Kanazawa Institute of Technology*

This is a private institute famous for introducing technology into education to the full. VCRs for self-teaching material are set up in the library in order to watch and listen to the teaching materials on videos which were given as assignments. Students just have to push the number of the video-tape on the buttons so that the robot brings out the video tape. Moreover, CAI is introduced for supplementary lessons, and slow-learners are obligated to study with CAI.

3. *Tokyo Institute of Technology*

Tokyo Institute of Technology is carrying on "remote" teaching. A so-called TV transmitting instruction system, designed by several members of the electrical engineering faculty, enables professors to teach at two campuses, 30 kilometres apart, without leaving their home base. The system, inter-connected by lightweight strands of fiber optics rather than by conventional thicker cables, allows for simultaneous transmission of the lecturing professors' faces, as well as images like graphs, charts, and other objects. Since the system is both video and audio interactive, students on the remote campus not only can talk back to the professor, but also are visible to him as they talk on a monitor near the podium.

The use of computers at the institutional level: The University of the Air

Many ways have been found to cater to people's desire to study, and to respond to the strong interest that the Japanese people have in education. The establishment of the University of the Air will add further to the range of educational opportunities available. At the University of the Air, the aim is to make use of radio and television in order to provide as wide a range as possible of university level educational opportunities.

Prior to the start of UHF, TV, and FM radio broadcasting in Japan, the Social Education Council began to study the ways of using such broadcasting for educational purposes, and it submitted a report to the Ministry of Education in 1969. Although the University of the Air is not directly based on that report, the first serious consideration on the use of broadcasts in university education was made by the Social Education Council.

In 1979, a decision was made to establish the University of the Air, and the University of the Air Foundation Bill was presented to the Diet. Legislative action on the bill was delayed, and it finally passed through the Diet in 1981. As a result, in July, the University of the Air Foundation, the corporation to run the planned university, was established.

The University of the Air accepted its first class of students in April 1985. Students range in age from 18 to 80. Course lectures and demonstrations are broadcast on the University of the Air's own UHF television and FM radio stations. Eventually, there are to be fully equipped and staffed study centres in every prefecture of the country, where the students of the University of the Air attend live class, meet their counselors, take examinations, and view video-tapes. Perhaps the most significant thing to note – and this is a real departure from the Japanese universities' traditional policy of accepting students on the basis of scores in competitive entrance examinations – is that students will be admitted on a first-come, first-served basis.

College-level courses on radio and television are nothing new in Japan, of course. About 1,000 universities, colleges, and junior colleges (where enrolment is dominantly female) are involved in broadcast education. Hoso Kyoiku Kaihatsu Centre (The National Institute of Multi-Media Education) has produced TV and radio programmes to be used on an experimental basis to gather data about broadcast education, and has presented TV courses. Some universities offer extension courses on their own via local TV and radio stations.

The University of the Air offers three general curricula: natural and applied sciences, social sciences, and the humanities. A diligent student is able to complete a degree in four years by earning 124 credits, including a rather bizarre requirement of four credits in physical education. The student watches or listens to four or five radio or TV programmes a week, studies at least five hours a week at home, and reports to a study centre once a week for at least three hours to attend classes, view video-tapes, and meet with counselors. As a life-long learning institution, the University of the Air has three major goals:

a) to give working adults and housewives a chance to earn university-level study;

b) to serve 18-year-old secondary school graduates who are expected soon to be too numerous for the traditional institutions to absorb; and

c) to employ the telecommunications technologies to produce a kind of enhanced new clientele, as well as to promote and encourage interinstitutional co-operation and exchanges.

With respect to the third objective, the University of the Air brings about some long overdue change in Japanese higher education. One such change is the introduction of open admissions. Another is that the transfer of undergraduate credit from one institute to another is becoming a routine matter, as students begin to request transfer of their credit from the University of the Air to other institutions. Transfer before graduation is not common in Japan.

The use of computers at the level of research

Data-base. Reference and procurement of needed information is becoming extremely difficult due to the sudden increase in the amount of information and the acceleration of stalling speed of information. As a result, the data-base has become something indispensable for research, development and education.

With Ken Kikukawa from Tokai University, Department of Engineering as the leader, data-base JSR was completed for audio-visual materials. Recorded are such materials as titles, targets, production company, protection facilities, keywords, etc. of science movies related with academ research and education which exist in Japan. They are stored in the large-sized computer at Osaka University, where programmes and data are made, designed for microcomputers. There is a system of lending out materials searched on-line upon telephone calls to related organs. These data-bases developed by individuals or research groups exist in considerable numbers, stored in the mainframe computers of each university, and are open to research workers and scholars. Likewise, Tsukuba University holds a Science Information Processing Centre where the data-base of overseas academic information are controlled collec-

tively, and offers its use to the research workers and scholars all over the nation.

Academic societies. Studies related to education and communication are popular, but this is not true with regard to higher education. In Japan, it has been pointed out that, generally, studies related to higher education are behind, compared to the studies of elementary and secondary education. Although communication between scholars is limited within their own academic societies, exchange of information between various differing fields is becoming more and more difficult, due to the subdividing tendency of these societies following the subdivision of science. The number of academic bulletins increased along with the increase in number of the academic societies, resulting in the increase of academic information in geometrical progression. A need has been pointed out to unite printed academic information in several phases:

- As for printed matter, presswork and bookbinding take time. Since prompt publication is expected among those who are related with Hi-Tech., time lag is quite an important problem.
- Printed information needs large storage space.
- Instantaneous reference is impossible with printed information.
- Printed information cannot be processed alone.

Even though printed matter has the advantage of being handy to publish, transmission of academic information can no longer depend entirely upon printing. Printed matter although available for scholars in a particular field has now become virtually unavailable for those in other fields of study. Therefore an academic network needs to be urgently reconstructed to take advantage of tele-computering with microcomputers as terminals.

There is a problem of Kanji (Chinese characters) in Japan which prevents the diffusion of tele-computering. However, a voice input device has already been developed along with automatic translation software. Studies such as artificial intelligence and the fifth generation computer are also popular: with these in use, construction of an international academic information network will certainly be a dream come true.

Research organizations. The following organizations undertake the study and development of education and communication.

Centre for Educational Technology

A high percentage of students enter teacher training colleges in their home prefectures, graduate from them and become teachers there. Also, the percentage of graduates is extremely high. Most people become teachers where they were born. Links between teachers and their alma mater are strong, especially in the cases of teacher training colleges. National teacher training colleges have strong influences on the education of the community in one way or another. Although some are teachers colleges, the ones in possession of powerful strength are the Department of Education of national universities.

National teacher training colleges for the most part use the Centre for Educational Technology for the improvement of educational methods, or the Centre for Research and Instruction of Educational Practice. The aims of these centres are the improvement in the quality of teacher training and teaching practice. Niigata University is a local national university situated in the district boardering the Sea of Japan; the regulation of the Centre for Research and Instruction of Educational Practice attached to its Department of Education is as follows:

Objectives

The Centre has as its aims to arrange equipment necessary for research guidance of educational practice, audio-visual aids, educational technology apparatus, documents, etc., and to carry out research as well as to give guidance by putting these into use, in both theoretical and practical manners.

Assignments

1. To perform part of the teaching practices based on the plans of the teaching practice committee.

2. To arrange equipment, institutions and documents necessary for research guidance of educational practice.

3. To undertake research studies for the improvement of teaching practice system.

4. To develop educational materials and documents for teaching practices.

5. To develop effective educational systems, materials and learning programmes through studies of educational technologies.

6. To offer the Centre's equipment, apparatus and documents for teachers and students' uses.

7. To plan and give open university lecture courses, study meetings, etc.

8. To carry out the assignments needed for the accomplishment of its objectives, other than the ones cited above.

Centres such as this one lead the studies for improvements of educational methods, mainly those making use of educational media, in co-operation with teachers in the community. They also fulfill the function as resource centres by compiling video and audio materials for teaching related to teacher training.

The Council of National University Educational Technology Centre is a joint organ of these centres, and holds a general meeting once a year and meetings for reading research papers. The Council strives for the improvement in quality of teacher training by keeping close contact with the Teacher Training Section, Higher Education Bureau, Ministry of Education. The head office of the Council is situated within the Centre for Educational Technology in Tokyo Gakugei University.

HKC

The Hoso Kyoiku Kaihatsu Centre (HKC : National Institute of Multi-Media Education) carries out numerous researches and developments of university education and communication. HKC was founded in 1978 as an institution for research and development related to the content and methods of college education using broadcasts. At the beginning, its task was to collect fundamental data necessary for the preparation of the University of the Air whose

classes started in 1985. HKC's aims of research and development are set as follows:

1. In university education using broadcasting, research and development of the educational process, the structure of courses, and the selection of fields most useful and appropriate to those who are currently university students and to adults receiving a university education anew through broadcasting.

2. In the presentation of a given subject and the overall educational process, research and development on the desirable intent and form taken by instruction in planning and producing television and radio programmes that make use of moving image and voices, in compiling and publishing texts and similar materials, and in offering instruction that is a synthesis of these various media.

3. For students who study on their own, using a variety of media, mainly broadcasts, research and development on making their study most effective, including motivation, perseverance, study methods, counseling, personal interviews with instructors, evaluation and the like.

4. For university education using broadcasting, to collect and organize necessary materials and to assist in the related activities of a wide range of universities and researchers.

5. Research and development on the application to university education of new information transmission technology and systems.

6. To take the lead in research and development of new types of university education that make use of a variety of methods and media, including university education through broadcasting.

7. Comparative research on the experiences in foreign countries of university education employing a variety of media including broadcasting, and communication and co-operation with appropriate institutions in research and development.

The principal researches of HKC are as follows:

1. Educational utilization of new communication technology
2. Experiments of interactive learning system
3. Video-making for teacher training
4. Video-making for technical colleges

From these, a characteristic one should be presented; that is, the experiment of distant education using Hi-OVIS. The interactive video project in Higashi-Ikoma district of Nara Prefecture employs fiber optics interconnection, transmitting its signals by means of lights rather than electrical impulses. Hi-OVIS (Highly Interactive Optical Visual Information System), an experiment currently being totally underwritten by the government, is billed as "the Telecommunications system of the 21st century".

Several hundreds of households in the area have been equipped with what is required to become part of the network: colour TV set, small video cameras mounted on the sets, directional microphones, and the consoles that trigger the interaction. The home viewer can, by pressing the proper keys, do such things as talk to the hostess of a community service programme (both his/her voice and image are heard and seen in the studio) and order up a video-tape for individualized viewing on one of the 40 channels of the system.

The Centre continues the experiment on distance education using this Hi-OVIS. Hi-OVIS' monitor allows conversation with the teachers at the studio from one's home. Needless to say, various means are thought out since the visual side is also interactive. The most recent plan is to use mini-computers (VAX) in the Centre where educational information is input for Hi-OVIS' monitor. There is also a plan for conversation between the teachers of the Centre and Hi-OVIS' monitor by electric mail; that is to examine how much communication can be maintained through electric mail, since Higashi-Ikoma and Tokyo district where the Centre is situated are at a great distance from each other. Moreover, because printed materials are difficult to revise, feasibility of electronic publishing is being considered.

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Fumio Yamamoto, et. al., *The History of Mass communication in Japan.* Tokyo: Tokai University Press, 1983

This is a detailed history of mass media (magazines, newspaper, radio and TV) which extends from the early Meiji era to the present. According to this, the development of mass media is determined by the following three factors; technological innovations,

political support and control, manoeuvres and tactics of private enterprises. This book vividly describes the process whereby newly born, epoch-making innovations have always been put under tight public control, including their educational utilization.

Ko Tsuji, *Education and mass communication, in Mass Communication and its Theory in Modern Society,* edited by Ikuro Takeuchi & Kazuo Kojima, Tokyo: Yuhikaku.

This is a quite detailed description of the way in which mass media have related to school education and social education since pre-war days. This paper clarifies the following two points. The first is the fact that movies, radio and TV could gain the position of school material in parallel with textbooks because they were willing and made every effort to get through the standard which the Ministry of Education set, while newspapers and magazines refused to be utilized as school materials and stuck to the role of journalism. The second is the fact that notwithstanding every effort to hold movies, radio and TV within the realm of educational materials, the very fact of their development itself betrayed that attempt. With the spread of these media, it grew more and more difficult to control children's contacts with them outside schools.

NHK (Japan Broadcasating Association), *The History of TV Watching for the Past 30 Years,* 1983.

This is the history of TV in Japan, not the history of its technological development, but that of peoples' attitudes towards TV. This divides the development of TV into three stages, take-off, development and maturation. At the take-off period, it fascinated people as entertainment media, and caused radio and movies to decline. At the development stage, it surpassed the newspaper in the impact as news media, and acquired a stable position as a comprehensive mass media. At the third stage, people have come to spend less and less time watching TV, and at the same time, have come to watch TV more and more purposefully and selectively. Behind this is a change in peoples' leisure time activities. As a result of the increase of income and leisure time, people have come not to remain mere passive audiences.

The Ministry of Posts and Telecommunication and Japan Society for the Promotion of Information and Telecommunication, *New Media Census.* Tokyo: Nippon Keizai Shinbun Newspaper company, 1985.

This explains the state of being of various new media, such as satellite broadcasting, satellite telecommunication, optical fiber cable, ISDN, CATV, data communication service, MCA system, LA, VAN, standstill broadcasting, teletext, High Definition Television, facsimile picture broadcasting, facsimile, videotex, TV conference, VRS, electronic mail, etc. Most current developments in this media both in Japan and abroad are reviewed in this book. Various policy measures for their development are also followed.

Subcommittee on Educational Broadcasting, Council on Social Education, Ministry of Education. *Educational Utilization of Microcomputer.* March, 1985.

This report generally explains the relations between the microcomputer and formal social education. This was written with the aim of making useful directions when microcomputers are to be introduced into educational scenes. Chapter One describes the information society in which microcomputers are to be used. Chapter Two deals with the possible uses and the problems of microcomputers in formal and social education. Chapter Three recommends the need to meet necessary conditions for the introduction of educational microcomputers. Chapter Four proposes a standard training curriculum for microcomputers for the people being engaged in education.

Social Policy, Bureau, economic Planning Agency. *Information Society and Life.* May 1983.

This book describes the future direction of the information technologies and, on the basis of the assumption, discusses the possible social changes and impact on the nation's life. The imagined changes here are only a possibility of the future and desirable picture of the information society. The negative aspects of the information society are assumed to be overcome by dealing appropriately with them. In relation with education, the possibility of off-campus learning and the importance of preparing the database are pointed out.

Youth Affairs Administration, Management and Co-ordination Agency, Prime Minister's Office, *Children and Youth of Information Society.* December, 1982.

This is a survey report on the influences of mass communication on youth. The subjects of the survey are children and youth

aged from 3 to 24, being a total of 10,000. The survey items are as follows: (1) attributes; (2) exposure to mass communications in general; (3) exposure to TV programmes, movies magazines, etc, which describe sex and violence and acceptance of such descriptions; (4) evaluation and general image of mass communications; (5) general idea about TV and comics; (6) leisure activities, matters of interest, view of life, view of the world, self-evaluation of one's own personalities; (7) mother's opinions on and attitudes to mass communications. In this report, it is clarified that TV plays an important role to youth in various aspects.

Masahiko Amamiya, *Education Needs Computer.* Tokyo: AIC. January, 1985.

This introduces the present situation of CAI practice in Japan, the advantages of CAI and other various aspects related to CAI are discussed. Schools in Japan that practice CAI are listed on the last part of this book.

Sangyo Noritsu Daigaku. *All about CAI.* Tokyo: Sangyo Noritsu daigaku.

Researchers and practioners introduce their experiences of CAI research and development and practices in Japan. Lists of software and hardware of CAI being sold in Japan and some of the articles on CAI are included.

The Asia and Pacific Programme of Educational Innovation for Development (APEID) has as its primary goal to contribute to the building of national capabilities for undertaking educational innovations linked to the problems of national development, thereby improving the quality of life of the people in the Member States.

All projects and activities within the framework of APEID are designed, developed and implemented co-operatively by the participating Member States through over one hundred national centres which they have associated for this purpose with APEID.

The 25 Member States participating in APEID are Afghanistan, Australia, Bangladesh, China, Fiji, India, Indonesia, Iran, Japan, Lao People's Democratic Republic, Malaysia, Maldives, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Republic of Korea, Samoa, Singapore, Socialist Republic of Viet Nam, Sri Lanka, Thailand, Tonga and Turkey.

Each country has set up a National Development Group (NDG) to identify and support educational innovations for development within the country and facilitate exchange between countries.

The Asian Centre of Educational Innovation for Development (ACEID), an integral part of the Unesco Regional Office for Education in Asia and the Pacific in Bangkok, co-ordinates the activities under APEID and assists the Associated Centres (AC) in carrying them out.

The programme areas under which the APEID activities are organized during the third cycle (1982-1986) are:

1. Universalization of education: access to education at first level by both formal and non-formal means;
2. Education for promotion of scientific and technological competence and creativity;
3. Education and work;
4. Education and rural development;
5. Educational technology with stress on mass media and low-cost instructional materials;
6. Professional support services and training of educational personnel;
7. Co-operative studies and innovative projects of research and research-based experimentation related to educational development.